NEWS LETTER

Society of American Bacteriologists

OFFICE OF THE SECRETARY-TREASURER

STERLING-WINTHROP RESEARCH INSTITUTE
RENSSELAER, N. Y.

VOLUME 22 — *April 1956* — NUMBER 2

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J. R. Porter, Editor-in-Chief, THE JOURNAL OF BACTERIOLOGY; P. W. Wilson, Editor-in-Chief, BACTERIOLOGICAL REVIEWS; H. B. Woodruff, Editor-in-Chief, APPLIED MICROBIOLOGY; Orville Wyss, Chairman of the Program Committee; B. W. Catlin, Chairman of the Division of General Bacteriology; Stanley Marcus, Chairman of the Division of Medical Bacteriology, Immunology and Comparative Pathology; James Roberts, Chairman of the Division of Agricultural and Industrial Bacteriology; J. J. R. Campbell, Chairman of the Division of Physiology.

J. HOWARD BROWN

1884–1956

Dr. J. Howard Brown, president of the Society in 1931, died in the Union Memorial Hospital, Baltimore, Md. on February 9th after a prolonged illness.

James Howard Brown was born in Jacksonville, Illinois May 18, 1884. He received his B.S. degree from Illinois College in 1906, the M.S. from the University of Illinois in 1909 and the Ph.D. in 1917 from Harvard. Illinois College awarded him the honorary degree of Sc.D. in 1929. Dr. Brown served as an Austin Teaching Fellow and assistant in comparative pathology at Harvard Medical from 1912 until the first World War, during which he was in charge of sera production by the Rockefeller Institute and Auxiliary Laboratory No. 1, U. S. Army and U. S. Navy. He joined the faculty of The Johns Hopkins University School of Medicine in 1919 and served as Associate Professor of Bacteriology from 1923 until his retirement in 1949. At his retirement from academic work he became associated with the Baltimore Biological Laboratory.

Dr. Brown was associated with the certified milk program for much of his life serving as councilor and president of the American Association of Medical Milk Commissions.

ROBERT S. BREED

1877–1956

Dr. Robert S. Breed, editor of Bergey's Manual of Determinative Bacteriology, died suddenly at his home in Geneva, New York on February 10, 1956.

Robert Stanley Breed was born at Brooklyn, Pa., October 17, 1877.

He graduated from Amherst College in 1898 and received the M.S. degree from the University of Colorado the next year. Further graduate work at Harvard led to the Ph.D. in 1902. From 1902 to 1913 Dr. Breed was professor of biology and geology at Allegheny College, leaving that post to become chief in research bacteriology at the New York Agricultural Experiment Station, Geneva, N. Y. He served as president of the S.A.B. in 1931.

Intensely interested in the taxonomy of bacteria, Dr. Breed served upon the committee of the Society that produced the first edition of the Manual of Derminative Bacteriology under the chairmanship of Dr. D. H. Bergey. On Dr. Bergey's death in 1937, Dr. Breed succeeded to the chairmanship of the Board of Editor-Trustees of Bergey's Manual. The first volume of the proposed two volume 7th edition was being set in type at the time of Dr. Breed's death.

JOURNAL OF BACTERIOLOGY

Annual Report for 1955

Four members of the Editorial Board (C. A. Evans, R. G. E. Murray, W. W. Umbreit, and O. B. Williams) completed their terms in 1955. The Editor wishes to thank these members for their great service to the *Journal* and the Society. Dr. Werner Braun had been asked earlier to serve as a member of the Board but could not accept the appointment before July 1955. After consultation with the Editor and Council Policy Committee, the President of the Society made the following appointments to the Board to replace the above members: Hilary Koprowski, Roger Y. Stanier, and Owen B. Weeks.

The accompanying tabulation shows the disposition of manuscripts and certain other pertinent data on papers published during the past two years. The number of manuscripts handled in the editorial office during 1955 was only slightly higher than during the previous year. There were 29 more manuscripts awaiting publication at the end of the year than were on hand at the end of 1954 so that a backlog of six to seven months still exists. It is hoped that this backlog can be reduced during 1956.

	1954	*1955*
Number of manuscripts under consideration January 1	34	40
Number of manuscripts received during year	405	407
Number of manuscripts accepted during year	280†	276*
Number of manuscripts returned to authors for correction or modification	121	138
Number of manuscripts rejected during year	119‡	128§
Number of articles published during year	271	276
Number of illustrations		
Tables	584	649
Line-cuts	385	372
Half-tones	156	119
Number of manuscripts accepted and awaiting publication December 31	98	127

* Includes: 31 mss. originally submitted in 1954; 1 ms. withdrawn by author; 1 ms. received as 2 mss. and subsequently condensed to 1.

† Includes 1 manuscript received as 2 mss. and subsequently condensed to 1.

‡ Includes: 3 mss. referred to other journals; 14 mss. withdrawn by authors.

§ Includes: 12 mss. originally submitted in 1954; 6 mss. returned to authors for modification and not re-submitted; 3 mss. withdrawn by authors; 2 mss. referred to other journals.

	1954	1955
Number of manuscripts under consideration Dec. 31	40‖	43¶

‖ Includes: 20 mss. in hands of reviewers; 13 mss. in hands of authors to consider reviewers' comments; 7 mss. in Editorial Office.

¶ Includes: 20 mss. returned to authors for modification; 14 mss. in hands of reviewers; 9 mss. in Editorial Office.

The following tabulation shows the expenditures of the Editorial Office for the past two years:

	1954	1955
Income:		
Balance on hand January 1	$324.82	$155.12
Received from Williams and Wilkins	3700.00	4000.00
Total	$4024.82	$4155.12
Expenditures:		
Editorial Assistant + Social Security	$3151.00	$3118.41
Postage, binding, office supplies, etc.	718.60	607.33
Total	$3869.60	$3725.74
Balance on hand December 31	$155.12	$429.38

BACTERIOLOGICAL REVIEWS

Annual Report 1955

During 1955, *Bacteriological Reviews* published 287 pages and closed the year with a comfortable but not unmanageable backlog of manuscripts on hand or back to the authors for revision. Perhaps the chief accomplishments were getting back on schedule with regard to material presented at the Annual Meeting (Presidential address, Eli Lilly Award address, symposia) and the formulation of definite publication policies for a few somewhat ill-defined areas discussed in last year's report. "Monographs" (containing unpublished materials as well as review of the literature such as a taxonomic paper) will be published as in the past—each contribution of this type will be judged not only on its merits but also how it can be accommodated in the overall publication responsibilities of the *Reviews*. This decision is merely a formalization of past policy.

A new system for handling symposia given at the Annual Meeting has been instituted for a trial period of two years. During this period an effort will be made to publish short summaries of all "official" symposia, i.e. symposia sponsored by a Division of the Society as opposed to informal round tables. After two years, the experience with this procedure will be evaluated and decision regarding its continuance or modification will be made. The details of the new policy were described in the April, 1955 issue of the *News Letter*; its practice is illustrated in the December, 1955 issue of BR.

The major policy matter regarding the operation of BR still to be decided is how to achieve a succession of the editorial board including the editor-in-chief with minimum dislocation of publication. This succession involves the usual difficulties encountered by the experimental journal, and in addition has the added complication that a review quarterly must operate in a certain sense about two years ahead of schedule. For example, reviews to be published in 1956 may have been solicited as early as 1954. For the leisurely composition desirable in a review, both author and editor must plan for a relatively distant delivery of the manuscript. It seems desirable, therefore, to have some overlapping of editorship (for example, that provided by an associated editor) to insure periodically an orderly and efficient transfer of that office. The CPC has appointed an *ad hoc* committee to consider this matter.

Financial Report

Income	
Balance December 31, 1954	$175.00
Received from Williams and Wilkins	500.00
	675.00
Expenditures	
Travel to official meetings (SAB, W & W)	199.77
Personnel (typing, checking mss)	111.00
Office (general supplies, stamps, phone)	164.23
	475.00
Budget for 1956	
Travel to official meetings	$250.00
Personnel	250.00
Office	200.00
	700.00
From Williams and Wilkins	500.00
Balance	200.00
	700.00

PERRY W. WILSON
Editor

APPLIED MICROBIOLOGY

Annual Report 1955

During 1955, Volume 3 of *Applied Microbiology* was published. A great variety of subjects was covered in the papers included in the six issues of the journal. A rough classification of the papers by subject matter is given below. The wide range of

topics indicates the extent to which *Applied Microbiology* is serving the members of the Society.

Subject	Papers Published in 1955
Microbiology of food products	16
Methods and techniques	12
Deterioration and preservation	9
Steroid production and oxidation	6
Microbial physiology related to applied processes	6
Microbiology of water and sanitation processes	6
Fermentations and bioengineering	4
Antibiotics	4
Culture identification and preservation	3
Enzymes	3
Microbiology of industrial products (nonfermentation)	3
Medical bacteriological techniques	3
Germicides and disinfectants	3
Bacteriophage	3
Yeast	2
Soil microbiology	2
Rumen microbiology	1

Six of our Editorial Board members retired with the completion of Volume 3. These men are Dr. J. C. Garey, Dr. H. Heukelekian, Dr. J. C. Lewis, Dr. A. G. Lochhead, Dr. R. L. Starkey, and Dr. P. A. Wolf. All have been of great help to the editor in evaluating manuscripts and have spent much time in making specific suggestions for improvement of some manuscripts. In selecting Editorial Board members for next year, I have been guided by our policy of equal representation among university, government or institution, and commercial laboratories and have made selections to give representation of the more common fields of microbiological interest, as determined by papers submitted for publication during the last 3 years. The new Editorial Board members, approved by the Council, are Miss Dorothy L. Fennell, Mr. J. J. Gavin, Dr. P. F. Klens, Dr. W. L. Mallmann, Dr. E. L. Schmidt, and Dr. R. L. Stedman.

The following tabulation shows the number of papers received prior to December 31, 1955, their disposition, and a comparison with similar data for 1954.

	1954	1955
Number of manuscripts received for publication prior to December 31	111	85
Number of manuscripts accepted	90	66
Number of manuscripts returned to authors for correction or modification	26	9
Number of manuscripts rejected	15	15
Number of manuscripts withdrawn	0	2
Number of manuscripts under consideration, December 31	6	6
Number of papers published	84	86
Backlog of accepted papers awaiting publication on December 31	37	6
Pages printed	398	394

The accompanying data show the expenditures of the editorial office during 1955.

Income:

Balance on hand January 1, 1955	$152.73	
Received from Williams & Wilkins	500.00	
Total		$652.73

Expenditures:

Secretarial and editorial assistants	60.00	
Postage, office supplies, etc.	102.44	
Transportation and meeting expenses	89.50	
Total		251.94
Balance on hand, December 31, 1955		$400.79

REPORT OF THE SECRETARY-TREASURER

Despite the fact that its income tax status is still undecided, 1955 was an eventful year for the Society. The Committee of Twenty (News Letter August 1955), charged by the Council to submit recommendations to the Council for the creation of a corporation to establish certifying boards and to perform professional but not scientific functions, submitted a charter and by laws of a proposed American Academy of Microbiology, Inc. This was accepted (by mail ballot of the Councilors) and ordered submitted to the membership for approval by a mail ballot. These were mailed from Baltimore February 13, 1956.

The vocational guidance booklet *Careers in Bacteriology* was reprinted and the third reprinting ordered. Sales of the second printing to institutions reduced the cost of publishing the booklet about one quarter.

Slightly more than three thousand persons registered at the annual meeting in New York, making this the largest meeting ever held by the Society. The visible index file for registrants, used for the first time by the Society, has become a permanent feature for future annual meetings. The large registration, coupled with great effort and team work on the part of the Local Committee, resulted in a profitable annual meeting.

The membership of the Society, as of December 31, 1955, numbered 5262, distributed as follows:

New	472
Old	4626
Sustaining	77
Honorary	3

Corresponding	13
Retired	13
Emeritus	59

The gain in membership, both in new and total, was nominal.

Two of the Society's five living Honorary Members, Sir Alexander Fleming and O. T. Avery, died during the year. Dr. Avery served as president of the Society in 1941. The Society also lost by death, one of its Corresponding Members, Sir Charles Martin.

For the first time in over forty years the Society operated within the income it received from dues. The $66,719 received from this source exceeded expenditures by $47, allowing the income from the Journal to be set aside as a reserve to be used when it becomes necessary to pay salaries to the editors of our publications. The excess of income over expenditures beyond that noted above come from interest and dividends from the Society's investments, sale of publications other than the Journal, and the annual meeting.

The financial statements of the Society, on a cash as well as accrual basis and balance sheet as of December 31, 1955, and a budget for 1956 follow:

Society of American Bacteriologists

Cash Statement—Checking Account

January 1 thru December 31, 1955

Balance 12/31/54: Checking account		13,926.51
Savings accounts		18,579.90
		32,506.41
Receipts:		
1955—Active New—413	4,904.50	
1955 — Active Renewals — 1917	22,889.94	
1956—Active New—34	408.00	
1956—Active Renewals—1977	23,673.68	
1955—Sustaining New	—	
1955—Sustaining Renewals—21	1,550.00	
1956—Sustaining New	—	
1956—Sustaining Renewals—50	3,750.00	
Dues for refund (Credit)	59.32	
Back dues (49-54)	265.00	
Future dues (57)	12.00	
Award Grants	1,150.00	
Sales of Proceedings	185.98	
Applied Microbiology Subs., Debit	30.75	
Annual Meeting 1955	9,732.90	
Alice in Virusland sales	46.40	
Income from Biotech Publications	121.09	
Refund from W & W—1954 Man. Service	1,860.55	
1954 Reimbursements from W & W on Journal of Bacteriology and Applied Microbiology	10,188.12	
Sales of Supplement	15.03	
Interest Income	1,827.36	
Dividend Income	165.00	
Proceedings Reprint Sales	874.38	
Mail list sales	268.64	
Sale of Directory (1953)	10.00	
Advertising—Proceedings	240.00	
Difco—for President's Fellowship	3,000.00	
Sales of Career in Bacteriology	124.00	
Sale of News Letter (1955)	5.00	
Advertising — Annual Meeting	60.00	
Total Receipts for 1955		87,417.64
Disbursements:		
Secretary - Treasurer's Expense	2,886.57	
W & W JB Subs.		
1953	8.00	
1954	176.00	
1955	18,696.00	
1956	16,464.00	
1957	8.00	35,352.00
1955 News Letter	2,529.96	
1956 News Letter	486.52	
W & W Managerial Services	8,469.00	
Dues refunded (Debit)	52.82	
1955 Annual Meeting & Program	4,134.89	
1956 Annual Meeting	269.30	
1957 Annual Meeting	.62	
Applied Microbiology Subs. (Credit)	30.75	
Alice in Virusland cost	10.21	
Awards	1,150.00	
Securities Purchased	16,811.98	
Committee on Certification Expense	538.67	
Committee of "20" Expense	616.73	
Career in Bacteriology cost	491.26	
Income Tax (1954)	5,069.03	
Tax case	621.31	
Proceedings cost	4,161.40	
Mail list cost	17.73	
Returned checks Credit	208.00	
Returned checks Debit	131.00	77.00
Reprints costs—Proceedings	624.30	
Expenses of Officers	100.16	
Secretary Service—Director of Local Branches	50.00	
National Academy of Science	100.00	
Miscellaneous	15.49	
Total Disbursements for 1955		84,667.70
Increase Cash for the Year		2,749.94
Balance 12/31/55: Checking Account	7,204.09	
Savings accounts	28,052.26	35,256.35

Society of American Bacteriologists

1955 Income, Expenses and Reserve

Accrual Basis

Income:		
1955 Active Mem.—58 New rec'd 1954	696.00	
Active Mem.—413 New rec'd 1955	4,904.50	5,600.50

Active Mem.—2709 Renew rec'd 1954	32,479.45	
Active Mem.—1917 Renew rec'd 1955	22,889.94	55,369.39
Sustain. Mem.—56 Renew rec'd 1954	4,200.00	
Sustain. Mem.—21 Renew rec'd 1955	1,550.00	5,750.00
Dues for refund (Credit)		59.32
Income from Biotech Publications		121.09
Sales of Proceedings		185.98
Annual Meeting 1955	9,732.90	
Annual Meeting 1955 Advertising	60.00	
	9,792.90	
Less: Expenses	4,684.89	5,108.01
Alice in Virusland, Sales	46.40	
Less: Expenses	10.21	36.19
1954 Reimbursement from W & W on Journal of Bacteriology and Applied Microbiology		10,188.12
Sale of Supplement		15.03
Interest Income		1,827.36
Dividend Income		165.00
Proceedings Reprint Sales	874.38	
Less: Cost	624.30	250.08
Mail list sales	268.64	
Less: Cost	17.73	250.91
Directory sales		10.00
Difco—for President's Fellowship		3,000.00
Total Accrual Income		87,936.98
Expenses:		
Sec.-Treas.: Salary (½-time secretary)	1,800.00	
Office expense & travel	809.59	
Miscellaneous expenses	276.98	2,886.57
W & W—JB subs (5174 × 8.00)		41,392.00
1955 News Letter	2,029.96	
Less: Sales	5.00	2,024.96
W & W 1955 Managerial Service	8,469.00	
Less: Refund to be paid 1956	1,907.69	6,561.31
Dues refunded (Debit)		52.82
Committee on Certification expense		538.67
Secty. service, Director of Local Branches		50.00
National Academy of Science		100.00
Committee of "20" expense		616.73
Career in Bacteriology cost	491.26	
Less: sales income	124.00	367.26
Income tax 1955		7,347.21
Tax case		621.31
Proceedings costs	4,161.40	
Less: Advertising income	240.00	3,921.40
Expenses of Officers		100.16
Miscellaneous Expenses		92.49
Total Accrual Expenses		66,672.89
Balance to Reserve		21,264.09
		87,936.98

Society of American Bacteriologists

Balance Sheet

As of December 31, 1955

Assets:		
Cash: Checking account	7,204.09	
Savings accounts	28,052.26	35,256.35
U. S. Bonds Series F (Maturity Value $7,000.00)		
Redemptive Value 1/1/55	6,387.00	
1955 appreciation	215.00	6,602.00
U. S. Treasury 2½% Bonds		36,117.84
Common stocks: 10 shares Standard Oil N. J.	1,512.62	
100 shares General Motors	4,625.59	
100 shares F. W. Woolworth	4,763.63	
100 shares Pub. Ser. Elec. & Gas	2,954.78	13,856.62
Accrued Assets:		
1956 Meeting paid 1954	500.00	
1956 Meeting paid 1955	269.30	769.30
1956 News Letter costs		486.52
1956 Subs. paid 1954	13.50	
1956 Subs. paid 1955	16,464.00	
1957 Subs. paid 1955	8.00	16,485.50
		109,574.13
Liabilities & Reserves:		
Deferred Liabilities:		
1956 dues paid in 1954	21.50	
1956 dues paid in 1955	27,831.68	
1957 dues paid in 1955	12.00	
Reserves for Biotech Publications	1,300.00	
Reserves for 1956 Directory	2,000.00	
Reserves for President's Fellowships (Difco)	3,000.00	
Reserve for 1956 Annual Meeting	500.00	
Reserve for 1955 Income tax—to be paid in 1956	7,347.21	
Reserve for Federal Income Tax case	7,000.00	
Reserve for Committee of "20"	1,500.00	50,512.39
Surplus:		
Invested capital	56,576.46	
Non-invested surplus	2,485.28	59,061.74
		109,574.13

Schedule A

The Williams & Wilkins Company

Managerial Service for Society of American Bacteriologists

Profit & Loss Statement

Calendar Year 1955

Income		8469.00
Expenses:		
Payroll (Clerical & Administrative)	4615.51	
Stationery, Postage, etc.	1089.98	
	5705.49	
Rent, Light, Heat, Use of Equipment (15% of expenditures)	855.82	
Total		6561.31
Excess (To be refunded in 1956)		1907.69

SCHEDULE B

Financial Statement 1955

Journal of Bacteriology and Bacteriological Reviews

Income		
Subscription sales		$87,426.19
Space sales		20,908.18
Total Revenue		$108,334.37
Expenditures		
Printing Cost of Text		
1516 pages J.B.	$44,645.70	
292 pages B.R.	8,968.64	
1808	$53,614.34	
Sustaining members page	159.60	
	$53,454.74	
Printing Cost of Advertising Section	5.906.54	
Postage	4,742.41	
Mail List	1,495.45	
Editorial Costs	7,902.14	
Marketing Costs	304.95	
Overhead Expense	13.578.00	
Total Expenses		$87,384.23
Profit-Current Issues		20,950.14
Back Volume Sales		2,268.02
Net Surplus for Year		$23,218.16
50% to S.A.B.		$11,609.08
50% to W & W		11,609.08

Paid Subscriptions	
Member	5,105
Non Member	3,243
Total	8,348
Non Member B.R.	287

SCHEDULE C

Financial Statement, 1955

Applied Microbiology

Income		
Subscription Sales		$12,856.06
Space Sales		1,137.49
Total Revenue		$13,993.55
Expenditures		
Printing cost of Text 394 pages	$9,451.27	
Printing cost of Advertising Section	389.24	
Postage	405.51	
Mail List	242.03	
Editorial Costs	1,133.88	
Marketing Costs	242.07	
Overhead Expenses	1,833.00	
Total Expenses		$13,697.00
Profit Current Issues		296.55
Back Volume Sales		456.30
Reprint Sales $482.60		
Mfg. Cost Reprints 132.29		350.31
Net Surplus for Year		$1,103.16
Balance for Loss 1953		1,266.50
Profit 1955		1,103.16
Balance of Loss		$163.34

Paid Subscriptions 1741

BUDGET, 1956

Income	
Dues—Active Members, 5000 × $12.00	$60,000
Dues—Sustaining Members, 75 × $75.00	5,625
Award Grants	4,150
Misc. Income	700
	$70,475
Expenses	
Subscriptions	$40,582
Managerial Service	7,000
Lilly Award	1,150
President's Award	3,000
News Letter	3,500
Secretary-Treasurer's Office	4,000
Legal Fees	3,000
Taxes	7,000
Committee on Materials for Visual Instruction	200
Committee of Twenty	1,000
Surplus	43
	$70,475

JOHN HAYS BAILEY
Secretary-Treasurer

EDUCATION AND TEACHING OF SCIENTISTS

The two articles below appeared in *Chemical and Engineering News* (Vol. 33, p. 4414–16 and 4417–4420, 1955) and are reprinted by permission of that organ and both authors. Both addresses point up a situation over which every scientist should be concerned, not only as a scientist but as a tax paying citizen of the country. Unless the defects in our educational system highlighted by these eminent men are corrected, the source of future scientific personnel for both industrial and academic fields will be dried up. It is all but impossible to make good scientists out of improperly prepared students.

INTELLIGENCE IS IMPORTANT

JOEL H. HILDEBRAND, *President, American Chemical Society*

This seems to me a good time to go on adding fuel to fires that are liquefying a situation that till recently seemed hopelessly frozen. The public is slowly awakening to the peril presented by the catastrophic decline in the number of teachers of science and mathematics who are prepared by

knowledge and interest to teach these subjects. Robert E. Wilson uttered words of wisdom at our Cincinnati meeting. A committee of the American Association for the Advancement of Science on the Teaching of Science and Mathematics has rendered a report, published in *Science* for Nov. 3, that should be widely read and heeded. The matter is being agitated in articles in magazines and editorials in newspapers, and by such trenchant books as "Education or Indoctrination," by Mary L. Allen; "Educational Wastelands, The Retreat from Learning in Our Public School," by Arthur E. Bestor, Jr.; "The Diminished Mind," by Mortimer Smith; "Quackery in the Public Schools," by Alfred Lynd; "The Republic and the Person," by Gordon Keith Chalmers; and "Why Johnny Can't Read," by Rudolph Flesch.

The Yale University Press is now assisting the good cause by publishing a volume of my own collected addresses upon education. In what follows I draw upon Chapter 1 of that collection for material not contained in previously published addresses.

Most persons realize that it is man's brain that has given him his vast advantage over animals, however superior they are to him in size, speed, strength, teeth, claws, armor, instincts, fecundity, or poison glands. It is generally understood also that brains, unlike instincts, require a lot of training in order to function effectively. And man has to try to learn how to keep his emotions from taking over in matters that should be left to intelligence.

Having built a complex civilization upon the foundation of human intelligence, it should be obvious that we need to discover, cultivate, and utilize all of that precious resource that is available among our youth.

A civilization that intelligence has built requires intelligence to manage. The housewife need not understand the machinery in her kitchen, but the manufacturers and the service men must. Having once embarked upon a technological civilization, we are like men traveling by boat down the Colorado River; we cannot turn back; we must apply out utmost knowledge, skill, and intelligence to keep going. The large ratio of ignorant riders to skilled navigators presents a grave hazard. We should have in the boat as few useless passengers and as many able navigators and oarsmen as possible.

Education is a scene of conflict between a variety of theories and purposes. Dictators promptly seize control of it for purposes of indoctrination. There are advocates of education for "democracy," for "life adjustment," for "peace," for "tomorrow," for "vocation," for "world citizenship." There are champions of "modern" education and of "progressive" education versus "traditional" education. One professor of education challenged the schools to "create a new social order," according to specifications that he generously supplied. The primary function of schools, that of transmitting to youth something of the rich intellectual and cultural heritage of Western civilization, suffers under constant interference by evangelists, social theorists, and devotees of orthodoxies.

In colleges and universities teaching and research are often in opposition; the elements of education—liberal, professional, technical—appear as rivals; and academic activities must compete with semicommercialized football.

These issues are important at all stages, but they are most critical in the early ones in school, where habits are being formed. If intellectual curiosity and effort are not then awakened, they they may never be. The superintendent of schools of a large city wrote, "What disturbs me most, as an individual, as I reflect upon both public and private school education in America, is the fact that our most able students are not required to work anywhere near up to capacity."

Why should we be disturbed if young people prefer merely to "get by" rather than to put forth effort? First, because an ideal of excellence is an essential ingredient of worthy character; second because we are dependent for our very survival upon a union of character with trained intelligence. Our people are concerned over the possibility of being wiped out in an atomic war, but they ignore a more real danger. The men in the Kremlin do not need to drop atomic bombs upon us; they are doing very well without them—by infiltration and subversion; by increasing their scientific manpower for the long pull while we waste ours. Instead of meeting their strategy with a better one, we allow ourselves to be diverted by all sorts of minor matters. If we are not smart enough to discern the real dangers and meet them effectively, then we shall not be saved and shall not be worth saving.

One of our greatest dangers lies in an anti-intellectualism fostered, strange to say, by school authorities who should be among its most valiant opponents. One expression of it is the pious cliché, "We teach boys and girls, not subjects." The superintendent of schools in a large city puts this into practice by assigning his teachers to subjects they have never studied because, he says, he wants his teachers to be "child-centered," not "subject-centered." According to this doctrine, the teacher is actually not even expected to teach "subjects." Any urge to learn about a subject a student must evidently develop for himself, because no teacher can possibly infuse into a student interest in a subject about which he himself has never felt any curiosity.

If, as is likely under these circumstances, the student never experiences an intellectual awakening, and even if he never learns to read or count, that, too, is said to be all right if only he is "living richly." According to the educational philosophy of John Dewey, as interpreted by William Heard Kilpatrick and reported by his biographer, "Kil-

patrick is not troubled so long as the child is working fruitfully at some self-propelling social interest and if he is interacting wholesomely in his social milieu. 'As I look at life,' he declared, 'I find a lot of people who don't use airthmetic; and I don't think life would be any richer for them if they used it . . . they just don't need it.' " That this doctrine is taken seriously is indicated by the testimony of another educator that "Kilpatrick influenced the lives of more teachers and children than any person who has lived in this generation." Certain schools of education have been the agents for its propagation. The way it works is described in the notes of lectures in a course in education written by a university senior preparing to teach school. According to her professor:

Our modern philosophy of education stems from Dewey, in which problem solving in life situations starting from child problems is the important thing. Dewey's point is that giving children adult problems is not likely to stimulate them to this process of problem solving. Partially from Dewey, and from Whitehead and others has stemmed the theory of planning the curriculum around the problems and needs of the children. One of the problems from the fourth grade through junior high is making friends and being accepted by your peer groups. Another problem from the eighth grade through senior high is adjustment in relation to the opposite sex. This is different from the former idea of centering on the intellect, an idea which still holds in European countries.

How those Europeans do cling to outworn tradition! This prospective teacher comments as follows upon her required courses in education:

None of us has been tested on the fields covered in the course as to our knowledge of the content of the field—only as to how much we can remember about how to teach them. I feel that I, for example, am quite unprepared to teach arithmetic, let alone mathematics, as the last courses I had in this discipline were high school algebra and plane geometry. Yet I will have to teach arithmetic and to attempt, somehow, to develop in my students a feeling for numbers as a system of symbols to be used in abstract thinking. . . . Another paradoxical point is that while most of the courses have quoted John Dewey's ideas on education and have professed to follow this philosophy, not one of these courses has required its students to read his books. I must confess that I have as yet to read a book by John Dewey. . . . The tests we take don't seem to measure our knowledge of the course (rather, they don't seem to measure my knowledge of the course). I have tried several approaches to these tests varying from intensive types of study to no study and guessing and I have yet to get below a "B." With my time at the university growing extremely short I would prefer to take subjects that are intellectually stimulating to me, not "snap" courses in busy-work.

The reactions of this student are typical of many. Schools of education have themselves contributed to the present shortage of qualified teachers by repelling many able candidates who refuse to go through with the full dose of 18 or more "units" of courses that do not win their respect. One may wonder why so much methodology need be invoked in order to teach so little. Why, indeed, need there be teachers at all if "the rich, adequate living of a seven-year-old" is the "best preparation for well-adjusted living for an eight-year-old?" Is the "social environment" of the child to be trusted to impel the child to acquire all "the techniques or skills or knowledges" needed by an adult?

I once shared the platform at a meeting of high school principals with a well known professor of education, who stated that in schools and colleges of the future the curricula would be "built" (schools of education now train "curriculum builders") upon what immature students think they need. I expressed the opinion that a child can hardly be expected to foresee his future needs, those elements of education that might make him a more useful, effective member of society. A person whose life might be enriched by developing an appreciation of the fine arts or of the elegance of mathematical reasoning, or who might be a better citizen for some acquaintance with history, can hardly be expected to become sware of these things unless they are brought to his attention. His situation may be clearer, I said, if it be recalled that in any gathering the person who most needs a bath is not the one most aware of his need.

If we intend to survive, we shall have to strengthen the hands of those school teachers and administrators everywhere who are opposing the degrading of education to the levels of the nursery and the school of charm. It is understandable that school officials who have never had any intellectual experience in their lives should try to compensate for this by denying the reality of intellectual discipline, but such persons should not be determining educational policies. They should be replaced by *educated* men and women. Their position as public servants was correctly stated by a committee of citizens in Berkeley, Calif., as follows:

Of course, the views and opinions of the administrators are entitled to consideration and respect. But they are not controlling, since the people have chosen the members of the Board of Education and not the administrators, as their representatives in charge of the Berkeley Public School program.

In conclusion, let me urge you, my fellow chemists, you who well know that intelligence is important, to use your influence in favor of education designed to develop to their full capacity our natural resources of native intelligence. There are many things we can do.

SCIENCE AS A PROFESSION AND ITS APPEAL TO YOUTH

CHARLES ALLEN THOMAS, *President, Monsanto Chemical Co.*

Joseph Priestley, you will remember, was a dissenter—a man who dared to be different. That's why I have an idea he would approve my decision to break a bit of tradition myself. Instead of delivering a technical address as other recent medalists have done, I am going to explore some of the reasons why I believe more young people are not choosing science as a career.

Such a deliberation may seem like a waste of time to those who agree with Maurois that the "minds of different generations are as impenetrable one by the other as the monads of Leibnitz." I don't share that belief. Our memories are not so short, but that we can push back the curtains which separate the seasons of life and recall what it was like to be part of the springtime. Of course, I'm not suggesting that I have discovered the secret which eluded Ponce de Leon. We cannot recapture youth through our reveries, but we can recapture the spirit of youth. It seems to me important that we understand what youth thinks about science and how young people feel about scientists, if we are to induce more of them to follow in our footsteps.

And we do need many more disciples, for right now, as you all know, our scientific profession is suffering from a very dangerous anemia caused by a shortage of new blood.

This year we graduated about 26,000 engineers; it is estimated that we could have used between 35,000 and 40,000. Facts like these are an old story to many of you, but they have suddenly become front-page news in a great many quarters because our condition contrasts so sharply with Russia's situation. Allen W. Dulles, director of the Central Intelligence Agency, made this quite clear some months ago, when he stated that "in the decade from 1950 to 1960, the Soviet Union would graduate 1,200,000 scientists and engineers, compared to 900,000 in the United States." He added that if something were not done at once "Soviet scientific manpower might well outnumber ours in many key areas."

There are a number of complex reasons for the shortages of technical manpower in the United States. The declining birth rate in the thirties now reflected in the over-all decrease in college graduates is an important cause. Another factor is the increasing demand for scientists and engineers in all fields. Expenditure on organized research in this country since 1946 has been more than twice as large as the total for all previous years of our history. This expansion is requiring more technically trained people than we can supply.

A part of the problem is another much more subtle influence which is disturbing more and more of our authorities. For example, John S. Coleman of the National Research Council pointed out recently that "When permitted free choice, today's students in the schools and colleges throughout the United States appear to have developed an alarming distaste for science and mathematics. This is at least one interpretation which can be placed on the masses of data and statistics which have been gathered and published by reputable investigators in recent years." (*1*)

Most of the manpower experts agree that the situation is most serious at the high school level. This is very disturbing because it is commonly accepted that the decision as to whether or not a young person will become a scientist or engineer is usually settled in the ninth or tenth grade.

In expressing concern over the situation, the specialists refer, of course, to the survey conducted by the ACS which showed that only one out of 11 high school students studies chemistry. And they have in mind a recent issue of a physics magazine which states flatly that the youths of our nation are "staying away from physics in droves." It is true that there has been a great increase percentagewise in the numbers of young people taking biology and general science courses, but, unfortunately, most of the experts see no very close correlation between the surge toward these subjects and an intense craving for scientific knowledge. In fact, some deny that there is any appetite for science among many of these students, but only a desire to satisfy high school curricula requirements.

Reports on the study of secondary school mathematics are equally disturbing. Since 1900, the percentage of high school students studying algebra has declined from 56% to about 25%; of those studying geometry from a little over 27% to roughly 12%.

In sample surveys, teenagers voted mathematics and foreign languages the two most unpopular subjects in school, and did not include science in the best-liked group. Because of such attitudes, the proportion of high school graduates of today who have taken two or more years of science and mathematics is less than half that of 1915.

Why aren't more high school pupils studying physics, chemistry, algebra, and geometry?

The first reason why I believe science is suffering from sterility—from an inability to beget sufficient heirs—is because it seems to me few people actually understand what we do. Perhaps that is not too surprising, for we specialists ourselves sometimes seem shockingly ignorant of what goes on beyond the artificial barriers which split our world of science into tight little islands of learning. There is a tendency for some of us to become so absorbed in

our own little sphere of interest, that we lose sight of the fact that it is but part of a much larger intellectual solar system.

Tragically enough, it is this limited individual who has apparently come to be regarded as THE stereotype of scientific man. Certainly, his image was imprinted in the minds of the teenagers in New England who told a survey-taker a few years ago that they regarded the "scientist as cold, calculating, and without social interest or moral standards—an occupation fit for 'queer geniuses.' "

With such an attitude, it becomes easier to understand why many young people now shun science as a profession.

The second reason I propose why more young people are not studying science is because their minds, and those of their parents, have been poisoned by the insidious cloud of anti-intellectualism which hangs over this country like a great shroud. As it stealthily blankets our society, the atmosphere becomes heavy and uncomfortable. Fear distorts reason, and suspicion twists the emotions, until at last all the tension is unleashed in an orgy of hysteria and hate. During such periods, when the "times are out of joint," intellectuals become victims of this explosive force.

In every age, there have been thinkers whose search for truth has led them into conflict with society. Some men are by nature explorers, but when their curiosity leads them into the quest for new ideas, they become objects of suspicion. Some of our scientific forebears like Lavoisier have died for their beliefs. Others like Galileo have been persecuted for their convictions.

And now today, we ourselves suffer from the same intolerance and mistrust. The recent witch hunts and the misapplication of some security regulations are outward blemishes which indicate the turmoil and unrest seething beneath the surface of our society. In some quarters at least it almost seems as if science is on trial.

Somehow, science has become identified in the minds of a great many people as a sort of super "Svengali" responsible for all of our dilemmas. If only this arch villain could be eliminated, they reason, then we could all live happily ever after.

To me, the important thing about this preposterous proposal is not that it can be punctured as easily as a toy balloon by logical thinking, but that it was ever proposed at all. It was a desire to protest against such shocking intolerance, I believe, which prompted the late Albert Einstein to declare that if he had it to do over he would not become a scientist, scholar, or teacher. Instead, he said he "would choose to be a plumber or a peddler in the hope to find the modest degree of independence still available under present circumstances."

When one like Einstein, at the science summit, hurls thunderbolts at the temper of the times, is it any wonder that so many of our young people should look up at those astride our scientific mountaintops and decide the climb is much too steep?

Nowhere, it seems to me, is the disrespect for scholarship more apparent in our society than in its attitude toward teachers. The average school teacher in our country earns only a little over $70 a week, less than many a truck driver or unskilled factory worker. Now it's accepted that "we get exactly what we pay for" and that is certainly true of America's educational system today. Our penny-pinching attitude is undoubtedly a basic reason why we are short so many teachers.

One of the fields hardest hit by the teacher shortage is science. The nation's high schools need 6000 new science teachers this fall but only 4000 graduated in June and of these only about 2000 will go into teaching.

When you add all of these figures up, you get another answer, which I believe is the third reason why more students are not choosing science as a profession. Because there simply aren't enough teachers to go around, some students are being denied an opportunity to study certain scientific subjects today.

For example, the scarcity of teachers who know anything about Boyle's law, or the quantum theory, or organic chemistry undoubtedly has a good deal to do with the fact that half of the nation's high schools do not offer courses in chemistry while 53% have dropped physics from the curriculum.

Rather than abandon a science course completely, many schools are using teachers drafted from other educational fields. Ray C. Maul of the National Education Association found in a nationwide survey that only 148 of 303 chemistry classes in 30 states were taught by teachers who had majored in chemistry.

To paraphrase an old cliché: "The handwriting is on the blackboard. It is time we began to listen to the admonitions of the experts who warn that we are in a "tragic situation." All too frequently for the good of our profession, a great many students who do have an instinctive interest in science have the misfortune to enter the classrooms of these unqualified teachers. There, either the spark of curiosity which they originally had is snuffed out by apathy, or else they develop a healthy disrespect for all things scientific.

We, of course, know that we are going to need increasing numbers of such dedicated teachers in the years to come to keep pace with the rest of the world. But I don't think there is any genuine awareness throughout this country of just how vital good secondary science training is to our national survival. Our competitors, however, are not so undiscerning. In Russia every high school student spends 40% of his time on math and science.

Now, I am not suggesting that we should emulate the Soviet pattern and turn our own educational system into a scientific assembly line. Such a program would be disastrous, for it overlooks the vital importance of the humanities, which must be anchored to technology if our civilization is to have strength, purpose, and direction.

But we do need to agree in this country on some kind of educational policy. Today it seems to me that our school system mirrors our own confusion as to exactly what the aims and purposes of education in a democracy should be. And apparently a great many people feel the same way, for at the White House Conference on Education which President Eisenhower has called for November, the 2000 delegates will consider this very question, "What should our schools accomplish?"

At this meeting, I hope the representatives will find the answers to some of the disturbing questions which many people are asking today. For example, at the secondary level are the old-fashioned disciplines being crushed under the weight of a curriculum top-heavy with "life-adjustment courses"?

Not being an educator, I would certainly not dare to pass judgment on issues like this, but I must admit that I share the concern of the people who are raising them. For example, the number of subjects in our high school has mushroomed from nine in 1890 to 274 at the present time. You can interpret these figures in one of two ways. We either know about 30 times as much as Grandfather—which I doubt; or we teach a great many things at school that he learned at home—which I suspect.

Whatever the reason, today our secondary school has become a sort of educational cafeteria offering a bewildering assortment of studies. And in selecting a bill of fare, too often the students regard the more difficult subjects as unappetizing, and choose only the light and frothy courses.

It is this alarming tendency to "choose the easy way out" which I believe is the fourth basic reason why more teenagers are not choosing science either as a study or as a career. There's no doubt about it—chemistry, physics, and algebra are more difficult, than family relations or personal hygiene—so why bother? Since they all lead to the same goal—the diploma—why not take the *course* of least resistance? That's the kind of attitude many high school students have today.

What disturbs most people about this whole situation is the tragic waste of talent among the "gifted" students who succumb to the temptation to choose the "softest" subjects. Allowed to drift through their courses, they develop an inability to concentrate on demanding material, for the mind like a muscle requires exercise to become strong. Too frequently such an apathetic attitude leads to a lack of desire for higher education which is an important reason, I believe, why fewer than half of the upper 25% of all our high school graduates ever earn college degrees.

To harness the brainpower of some of this latent talent, the Ford Foundation and the Carnegie Corp. have just announced the largest privately sponsored college scholarship fund in history to be distributed on the basis of competitive examination among the nation's top-flight high school graduates. Establishment of this program will greatly improve the situation, but at the same time I believe we must double our efforts to instill a greater wish for higher education in more of our gifted students. The project is of direct concern to us, for it is from this group that we shall have to recruit many of our future scientists if we are to keep pace with the nation's needs.

But what can we do to help? How can we make the scientific profession appeal to more young people? There is no one big answer to this problem, but I should like to offer some suggestions.

First,—I think we scientists and engineers must concentrate more of our energies on this problem. How many of you have given of your thought and time to encourage young people to become chemists or chemical engineers? If we are to make chemistry more appealing to youth, then we must take the time to become better interpreters of what we do. Bring a high school class into your laboratory occasionally. Let them breathe the air of a busy lab—stringent and perhaps obnoxious to the neophyte. Once acclimated they may learn to love it. Tell them what you are searching for—instill in them the drama and excitement of creative chemistry.

If you are in engineering, show a group of teenagers a modern chemical plant—explain to them the workings of a distilling column, a furnace, or an evaporator. Tell them how an experiment was taken from the test tube and made into a continuous process. Explain the vital role of instrumentation, and demonstrate how electronic devices can precisely control the uniformity of the product more efficiently than many hundred of chemists making spot checks.

If you are in management you should be most uneasy because more young people are not studying science. The future of your company largely depends upon a successful solution of this problem. Organize programs to educate the youth of your community about the necessity and importance of the chemist and engineer. Encourage your associates to give time to such projects. Contribute some of your own time. Persuade your company to support these projects financially. Learn what the young people think about you in your community. Are they interested in your plant? Would they like to work there when they grow up? Talk and *listen* to the young.

If you are a teacher, shouldn't it be a part of your job to recruit future chemists and chemical engineers? Some of the old timers in the teaching

profession have told me that in the early part of this century they literally went out and beat the bushes for recruits. Often they spent much time convincing undergraduates to go on into graduate work. I need not point out to many of you teachers in this audience how different the situation is today. And the products of these professors who taught during the early decades of this century haven't done too badly. Our chemical and electronic industries are monuments to their endeavors, for they were built by men who received their inspiration from these great teachers.

It seems to me that at the time these professors were in their prime, we did not lay quite as much emphasis on advanced mathematics as a requirement for specialization in certain branches of chemistry as we do today. Compare, for example, the examinations in organic chemistry from 1910–25 with similar papers today, and notice how little mathematics was required four or five decades ago. And remember that industry needs men today with organic training like the men of the past. I discussed this problem with some outstanding German chemists last month, and they expressed the opinion that we Americans were discouraging youth from entering certain branches of chemistry by stressing mathematics to such a degree. How much math did Emil Fischer, Ehrlich or Fleming use in his work?

Do not misunderstand me. I am not decrying mathematics, but in applying the so-called "screening tests" for vocational guidance, we should be careful, I think, to make certain we are not overemphasizing mathematical proclivities as a requirement for organic chemists and biochemists. Certainly it is important to make sure that we are not shutting the doors of our laboratories on young, creative, imaginative minds, because of a too rigid insistence on highly specialized mathematical acumen. Speaking for an industrial enterprise which was built on the application of organic chemistry, I believe this point is one that should be seriously considered.

Thirty years ago, when I became a member of this great organization, the AMERICAN CHEMICAL SOCIETY, we had no such problem as the one I have been discussing. In fact, our most serious worry then was to find enough jobs for all the chemists and chemical engineers who were seeking work. The situation was especially acute in the 1930's. You all know what was done—the chapters are among the brightest in our society's history.

Today, our organization faces another test—to make our profession more appealing to more talented young people. The ACS, of course, is already well aware of this responsibility, and is striving to improve the situation. Many of our local sections have already adopted well-integrated programs to help schools improve their library and laboratory facilities. Others are providing demonstrations, speakers, and films to secondary schools in an effort to stimulate interest in chemistry among students. These facts are reassuring, for no organization is better qualified to undertake this work than our own. Within our group all facets of the world of chemistry and chemical engineering are represented. In one society we have those who will train our future chemists and technicians and those who will employ them.

If we are really to meet the challenge, however, I think we must do still more. Using the methods and media of experienced communicators, we should work to raise the position of our science teachers. As part of the program, we should campaign strenuously for better salaries for teachers in our own localities as some of our sections have already started to do.

The opportunities for using TV should be thoroughly explored, both as a teaching aid as Hubert N. Alyea of Princeton University suggests, and as a means of informing the public of what chemists and chemical engineers actually do. Present the human side of the man and tear away the false prejudices that engulf him. Tell the story of how some of the most revolutionary discoveries in science, which have changed the mode of life of all of us, came from the quiet, unassuming men of thought. Attempt to reconcile the age-old conflict between the "thinker" and the "doer", and make clear how each complements the other. Show young people that one can enter the disciplines of science and not be myopic, and explain how the expanding scientific vista can lead to a well-rounded, satisfying life.

Let's try to recapture the spirit of youth, and strive to see life through their eyes as they view this troubled world. Perhaps if we are less sophisticated in our approach, more can be accomplished.

How fortunate we are in the United States to have such an organization as the ACS—built on democratic ideals, and operated according to democratic principles. It is a forum where new ideas and new approaches can be hammered out on the anvil of experience.

If this virile organization of 74,634 members under its present strong leadership embarks on a campaign to meet this crisis with vigor and enthusiasm, using the many avenues of attack that it has at its disposal—then I shall be sanguine about the future.

LITERATURE CITED

1. National Academy of Sciences, National Research Council, News Report, May–June, 1955, page 40.
2. Dick, William E. *Impact of Sci. on Soc.* **5**, 167–8, Sept. (1954).

THE SCIENCE TEACHING IMPROVEMENT PROGRAM OF THE AAAS

The Science Teaching Improvement Program is a program for the encouragement of improved

teaching and the preparation of adequately trained scientists. Its efforts will succeed or fail on the platform of increased interest in and respect for science and science teaching, including mathematics.

There are seven principal areas in which activity at some level is encouraged by the Cooperative Committee on the Teaching of Science and Mathematics of the American Association for the Advancement of Science.

The first one of these areas may be stated that, high school science teachers should have reasonable knowledge of the subject matter they teach. To implement this idea there must be an increase in the number of "subject matter" courses in curricula for those students whose undergraduate major was Education. Many grants are given by the National Science Foundation and Industrial organizations that suggest or even require that subject matter courses be emphasized. Institutions of higher learning receiving grants under these programs are being aided and encouraged to study ways of providing appropriate subject training courses. At the undergraduate level an increased interest in curriculum development, the participation by scientists on certification commissions, and more careful guidance of students at all levels are some of the areas being actively promoted.

A second activity is concerned with the emergency aspect of the need for teachers and purposes essentially that special accelerated programs in education should be arranged for those who are qualified in subject matter and wish to obtain teaching positions. Encouragement is being given to experiments designed: to provide all requirements in Education during one semester; to provide practice teaching credit for college assistantships; to give a summer of education courses, a year's apprentice teaching on full pay but under supervision and a second summer of education courses; to provide correspondence courses to satisfy Education requirements; to give Education course credit by examination; and, other similar programs.

Point three recognized that vigorous measures will be necessary to interest a considerably larger number of potentially qualified students in preparing for Scientific and teaching careers. Studies of motivation in the choice of careers are of special interest. When, why, and how do students become interested in Science as a career? Lectures on special topics, traveling libraries, demonstration lectures, Science fairs, talent searches, Junior Academic career pamphlets, TV and radio programs and guidance personnel are all part of the picture. Activities in all of these and similar areas are being sponsored by governmental and private agencies. The AAAS is participating in many planning and supporting conferences and actively engaged in some of these programs.

A special insight into the subject of motivation is being sought by a subcommittee of the AAAS Cooperative committee on the teaching of science and mathematics. Mr. Bernard B. Watson, the chairman, and this committee hope to develop ideas for approaching the whole problem of motivation and counseling in science that can produce information of value.

The fourth item is concerned that Science teaching must be made more attractive financially. Summer employment in industry, additional pay for direction of student research projects, salary increases based on merit, pay for industrial consultant services, governmental subsidies and other means have been suggested as possibilities. It is felt that this program can "look with favor" on any possibility of upgrading salaries. Scientists must be alerted to serve on school boards and attend PTA meetings. They must become concerned enough to speak in favor of increased property assessments for schools. This point is the pivotal one to the success of all long-term plans, but it is perhaps the least approachable directly by AAAS.

As a fifth point the working conditions of the science teacher can and should be improved to enhance his success. He can use more adequate visual aids, better equipment, increased laboratory space, special laboratory assistance, and monitoring assistance by relief from such things as study halls and ticket taking at ball games. The S.T.I.P. program of the AAAS includes encouragement of University, industrial or other centers for loan of equipment to high school teachers. Traveling libraries and science kits containing equipment or instructions for their preparation can be used. Local scientists may participate by acting as substitute teachers so that the regular science teacher can attend his professional and scientific meetings.

In the Washington, D. C. area a large group of scientists has registered to substitute for area teachers during the March National Science Teachers Association meeting. It is hoped that this helpful idea will be copied throughout the country. The scientist can also assist the teacher in guidance and the student in career selection. Industry and universities may provide science-centered assembly programs and classroom demonstrations as they are useful to the high schools. Qualified scientists should write high school texts to incorporate the latest scientific information and keep the high school teachers and students aware of modern developments.

Although local awards programs and special awards programs of various types have been developed, the sixth area is intended to call attention to the need for a general awards program. Distinguished service teachers selected on a nationwide basis for excellence of presentation and success in stimulation of students should be given

suitable financial and public recognition. Requests for funds for this purpose have gone out with favorable interim response but no final action as yet.

The seventh item is concerned with day to day aid to the in-service teacher. It states that competent science and mathematics counselors should be employed to tutor, assist, and serve as a source of information for less experienced teachers. A considerable portion of the present grant money is directed into this activity. Two counselors are to be employed in each of four states. These counselors are to work closely with a major university of the state and the state departments of education. It is hoped that this impetus given to the science area will develop into complete coverage and employed of similar people in all states as permanent additions to the staff of the state departments or possibly of the universities.

Pennsylvania State University and the Universities of Texas, Oregon and Nebraska have been selected to administer the Counselor programs with their respective state departments of education. It is expected that counselors will work closely with high school teachers to provide a better presentation of subject matter and thus produce a better informed, more willing student who is not disturbed at the amount of work required in science courses.

Many activities in the program are regularly a part of the existence of many national, state, and local groups. It has been felt that all programs could be given added impetus by knowledge that other similar projects are underway. The S.T.I.P. has been presented and will be presented to many state, regional, and national meetings of Scientific societies, upon invitation, and explanations of possible projects for such groups will be gladly furnished.

The Science Teaching Improvement Program is directed by Dr. John R. Mayor whose special field is mathematics and who is on leave from the University of Wisconsin. His Assistant Director is Dr. I. Eugene Wallen, who is a zoologist on leave from Oklahoma A & M College.

A description of the aims and objectives of S.T.I.P. was published in *Science* of July 22, 1955, and in the September issue of *The Scientific Monthly*. Copies of this description in pamphlet form, Science Teaching Improvement Program, may be obtained from the AAAS office in Washington.

I. E. WALLEN
Assistant Director

TECHNICAL NOTES

A PLUNGER-HAMMER FOR THE HUGHES MICROBIAL PRESS[1]

HOWARD GEST AND ALVAR NORDSTROM, *Department of Microbiology, Western Reserve University School of Medicine, Cleveland, Ohio*

In 1951, D. E. Hughes (Brit. J. Exp. Path., 32, 97, 1951) devised a new and effective method for disrupting microbial cells. In this procedure, microbial cell paste (either with or without abrasives) is placed in a cylindrical hole in a stainless steel block previously cooled to a temperature of +2 to −35 C. The block is composed of two symmetrical halves which are held together with four bolts. In the usual case, the cell mass is allowed to freeze and is then sharply struck several times at a force of "12–15 tons per square inch" (as measured with a Brunnel hardness tester) by an accurately machined steel piston driven into the hole by a "fly press". This causes efficient crushing of the cells and the resulting material is simultaneously forced from the hole, across the interfaces, and into a reservoir channel cut into (each half of) the block. The block is then separated into its two component halves and the disrupted (and still frozen) cell material can be readily removed from the reservoir channels, with an appropriate spatula, for extraction or other treatment.

One of the major obstacles to use and exploitation of this procedure as a research tool has been the difficulty in obtaining a "fly press" (or suitable substitute) of the specifications noted, either in this country or abroad. Accordingly, we have devised a simple and relatively inexpensive apparatus which adequately delivers the force required for successful use of the Hughes press. Because of the increasing number of requests we have received for description of this apparatus, we herewith report the details.

The "plunger-hammer" (see Figure 1 for side-view) consists essentially of an 85 lb steel weight (18 in. long and 5⅜ in. in diameter; attached to a ¼ in. steel cable) which can be lifted distances up to approximately 6 ft and then suddenly released to fall freely down a metal guiding tube (GT; 5½ in. inside diameter).

On the same axle as the crank (CR) is a small steel roller (6 in. long and 2 in. diameter; not shown in Figure 1) in which the end of the cable is suitably embedded. Between the crank and the "cable-winding" roller is a ratchet gear (RG) which normally engages with the end of a lever (L). This ratchet wheel and pawl arrangement permits winding the cable (i.e. lifting the weight) to any

[1] This work was aided by a grant (Contract No. AT(30-1)-1050) from the Atomic Energy Commission.

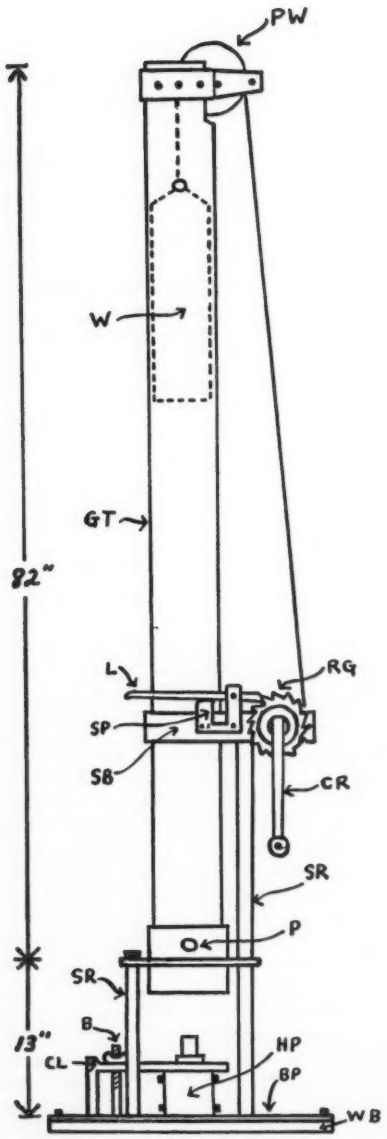

Figure 1. Side view of the plunger-hammer

B—bolt, BP—base plate, CL—clamp, CR—crank, GT—guiding tube, HP—Hughes press, L—lever, P—safety pin, PW—pulley wheel (V type; 5½ in diameter), RG—ratchet gear, SB—support bracket, SP—spring steel plates (pair), SR—support rods (4 total), W—weight, WB—plywood.

desired point and automatically prevents unwinding of the latter. On the axle between the ratchet gear and crank is a steel spring which prevents the crank from engaging the gear unless a slight forward pressure is exerted. When this is done and the crank handle rotated, two metal knobs (180° apart) on the crank engage with corresponding knobs on the side of the gear wheel, which thereby is rotated causing the cable to be wound. At the appropriate distance, the forward pressure on the crank is released and the latter then springs back out of play.

The weight is released (after the Hughes press is in place) in guillotine-fashion by rapidly pushing down on the free end of the lever (L). This motion forces the lever between two adjacent thin spring steel plates (SP) which are bent so as to hold the lever down firmly. Since the lever no longer engages with the gear wheel, the latter rotates freely and the cable unwinds rapidly.

The Hughes press (HP) is held in position on the base, just beneath the tube, by a simple clamp arrangement (CL) which slips onto the bolt B. To facilitate positioning of the press, a small metal plug (3/16 in high; 1 in diameter) is permanently attached to the base plate (made of ½ in steel; 24 in by 24 in). This plug fits snugly into a corresponding hole bored out of the bottom of the Hughes press. In order to ensure that the "positioning hole" does not weaken the press at the bottom, new hard-steel presses now being fabricated in our machine shops are slightly thicker between the internal reservoir channel and the bottom surface.

The entire apparatus is placed on a piece of ¾ in plywood and after suitable leveling to ensure a vertical drop the plunger-hammer is securely bolted to the floor using one bolt through each corner of the base plate. In figure 1, P designates a steel "safety pin" (¾ in diameter) which is inserted through the guiding tube, and on which the weight is allowed to rest, when the plunger-hammer is not in use.

The distance through which the weight is dropped and the number of blows required to disrupt frozen cells depend on a number of factors, e.g., type of cells, size of press, whether or not abrasives are used, etc. It may be noted in this connection that for crushing 20 to 30 g of frozen cell paste in a rather large press, we generally apply 3 to 5 blows in rapid succession from the maximum distance. Using the plunger-hammer as described and following the directions of Hughes for assembly, operation and care of the press we have successfully and routinely made cell-free extracts from a large variety of microorganisms. In our experience, the method is rapid, efficient, surprisingly simple in execution, and has provided highly active enzyme preparations.

JORDAN HALL AT INDIANA UNIVERSITY

The Departments of Bacteriology, Botany and Zoology at Indiana University have recently occupied the newly completed Jordan Hall of Biology, named after David Starr Jordan, former president of the University. This building provides approximately 200,000 sq. ft. of work space for the Departments. The main auditorium seats 350 persons. In addition, there are four classrooms, 18 teaching laboratories, and several seminar rooms. Research facilities include 46 constant temperature rooms of various sizes, darkrooms, extensive animal quarters, wood and metal working shops, x-ray and electron microscope rooms, laboratories for radioisotope work, 3,600 sq. ft. of greenhouse space, and other specialized areas. The departmental library situated in the building has shelf capacity for 75,000 volumes and a reading area seating 96 persons: over 600 periodicals are currently received in this branch library. The herbarium, of library stack construction, has a capacity of 250,000 sheets. Each member of the staff has a suite consisting of a private office and a well-equipped research laboratory or group of laboratories. Offices for 125 graduate students and special areas for graduate student research are provided. The building is air conditioned. It will be formally dedicated on June 8, 1956.

The area devoted to Bacteriology includes three class laboratories, fifteen research laboratories, two dark rooms, twelve constant temperature rooms, preparation and special instrument rooms, greenhouse, centralized media kitchen, glassware washing, storeroom and storage area.

The staff of the Department of Bacteriology includes Assistant Professors W. A. Konetzka, Roy Repaske, E. D. Weinberg, Associate Professor Dean Fraser and Professor L. S. McClung (Chairman). Correspondence is invited from bacteriologists who expect to be in the area at the time of the dedication and who may wish to attend the scientific program and other events which are now being planned.

BIOLOGICAL LABORATORY, COLD SPRING HARBOR

The Biological Laboratory will offer three specialized courses next summer, designed to acquaint research workers with the most important techniques used in bacterial virus research, bacterial genetics, and genetics of fungi. The course in *Bacterial Viruses* will be held from June 18 to July 7, *Genetics of Fungi* from July 11 to July 31, and *Bacterial Genetics* from August 2 to August 22. The course on Genetics of Fungi is being offered for the first time this year, and G. Pontecorvo of the University of Glasgow will be in charge of it. A limited number of fellowships covering part of the tuition fees will be available for graduate students. In addition, research facilities for work in microbial genetics throughout the summer will be available to a limited number of independent research workers. Information may be obtained from the Biological Laboratory, Cold Spring Harbor, New York.

SUMMER COURSE IN TISSUE CULTURE

The Tissue Culture Association is again sponsoring a Course of instruction in the principles and techniques of cell and tissue culture. The Course will be under the direction of Dr. Charles M. Pomerat, University of Texas Medical Branch. It will be given at the University of Colorado School of Medicine, Denver, Colorado from July 16th to August 11th. The tuition will be One Hundred Dollars.

This is an intensive 4-week Course dealing with the structure and function of living cells, techniques of tissue culture and interpretation of results. It is designed to give to responsible investigators a background of general information on cultured cells and an opening wedge of training in the application of the method to problems in several current areas of research.

The morning work includes a review of the principles and techniques pertaining to the main event of the laboratory work, and a demonstration of the procedures to be used. Each participant prepares and manages his own cell cultures. Afternoons afford opportunity for library work and for consultation with the staff concerning the projects contemplated by each of the class members. Evening lectures Monday through Friday by members of the staff and by distinguished guest lecturers cover various fields of research in which the tissue culture method has been used to advantage.

The Course is designed specifically for post graduates (M.D. or Ph.D.) who plan to use cultured tissues in their research or teaching. Requests for application forms should be addressed to Dr. Mary S. Parshley, College of Physicians and Surgeons, 630 West 168th St., New York 32, N. Y., and should be completed and returned to her not later than May 1st. Successful candidates will be notified about May 15th.

LEDERLE MEDICAL STUDENT RESEARCH FELLOWSHIPS

The Lederle Laboratories Division of the American Cyanamid Company announces that it is making available to medical schools throughout the United States and Canada "Lederle Medical Student Research Fellowships" for the year 1956.

These Fellowships, in amounts not exceeding $600.00 per year for any one individual, are intended to relieve in part the financial burden of

students who desire to devote their summer vacations to research in the basic (preclinical) medical sciences.

Students who apply for Lederle Medical Student Research Fellowships must be of good scholastic standing and must have the consent of the faculty member under whose supervision their research is to be conducted. The selection of students to receive such awards will be made by the dean of the medical school, or by the regularly constituted committee of the faculty charged with such selections.

By special permission of the dean or the Fellowship Committee of the school, the student may carry on such research in another medical school provided that satisfactory arrangements are previously made with the faculty member of the school and the department in which the student is to carry on his research.

BACTERIOLOGY BUILDING AT WISCONSIN

The new Bacteriology building at the University of Wisconsin was dedicated on January 30, 1956. Lt. Gov. Warren Knowles, representing the State of Wisconsin, Wilbur Renk, the Regents of the University, E. B. Fred, the University, took part in the ceremonies presided over by Dean R. K. Froker. Dr. W. D. Stovall gave the dedicatory address.

Located at the intersection of Linden and Babcock Drives, the Bacteriology building represents the culmination of more than thirty years of planning. Construction was started late in July, 1953, and by the middle of September, 1955, the building was ready for use by students and faculty. Designed to house the teaching, research, and public service work of the Department of Bacteriology, the building also provides classrooms for all-University use. Its location facilitates cooperative work with the Departments of Biochemistry, Genetics, Plant Pathology, Dairy and Food Industries, Soils, Agronomy, Veterinary Science, and the Laboratory of Hygiene.

Entrances at ground level on the West end of the building lead to a 174 seat lecture room, a large teaching laboratory, and a room where students can study between classes. The laboratory has small, adjacent rooms for incubators, sterilizers, preparations, and storage of instructional materials; it is designed to accommodate 60 students. The principal service and storage facilities of the Department are located on the ground floor and in the basement. A pilot plant laboratory for research and instruction in fermentation processes is located at the East end of the ground floor. Also on this floor may be found two subterranean plant growing rooms and a special laboratory for work on slime molds.

The building was designed to concentrate the teaching laboratories and classrooms on the ground floor and first floor. This arrangement is convenient and efficient for students and faculty, and for the servicing of class work.

On the first floor are two classrooms, a seminar room, a large teaching laboratory with service rooms for advanced courses, a smaller one for special courses and for research work, and two research laboratories. The departmental administrative offices, library, and conference room also are on the first floor.

Most of the research laboratories and offices are on the second, third, and fourth floors. The general plan is to provide a unit for each professor: an office and around it a laboratory for six research workers. There are eleven such units in the building, plus five overflow laboratories for a total of 20 to 30 additional research workers. A number of rooms are used in common, such as those on the second and third floors for incubation, washing and sterilizing, inoculation, refrigeration and use of special apparatus. Also on the third floor are a chemistry laboratory and a laboratory for work involving isotopes.

The fourth floor is especially arranged and equipped for work on infectious diseases of animals. There are rooms for healthy animals, for feed storage, and for cage washing in a part open to visitors. The rest of the floor is closed off and may be entered only by authorized persons through a series of rooms where street clothes are removed and laboratory clothes are donned. In this "contaminated" part of the floor are the rooms for animals infected with different pathogenic agents, post mortem rooms, and separate laboratories for workers on the various diseases. All laboratory clothing and materials used in the "contaminated" part of the fourth floor are sterilized before being washed; all cage litter is burned in an incinerator.

COMMITTEE ON BACTERIOLOGICAL TECHNIQUE

The membership of the Committee on Bacteriological Technique has been somewhat changed since the 1955 meeting. The membership of this committee now is as follows: M. J. Pelczar, Jr., Chairman; R. C. Bard; George Burnett; H. J. Conn; R. D. DeMoss; E. E. Evans; M. W. Jennison; A. P. McKee; A. J. Riker; Joel Warren; O. B. Weeks; F. A. Weiss.

PRESIDENT'S FELLOWSHIPS

Attention is called to the availability to young microbiologists of funds for special studies in microbiology. The Fellowships provide money for travel and maintenance expenses for short periods of training and aid in technical procedures, and for study in microbiology. They make possible visits to other laboratories to learn new techniques and obtain other specialized training. The Fellow-

ships are available to members of the Society who are 35 years of age or younger.

Qualified members who can profit from the Fellowships are urged to apply, and all members are urged to call them to the attention of their associates. Applications can be made at any time, and they will be processed promptly by the Committee. For blanks and other details write to any of the following members of the Committee: R. L. Starkey, Chairman, Agricultural Experiment Station, New Brunswick, N. J.; C. A. Evans, Department of Microbiology, School of Medicine, University of Washington, Seattle 5, Washington; I. C. Gunsalus, Department of Chemistry and Chemical Engineering, University of Illinois, Urbana, Illinois.

KIMBLE METHODOLOGY RESEARCH AWARD

Nominations for the Fifth Kimble Methodology Research Award are being accepted until June 1, 1956. This award, which gives recognition to the application of scientific knowledge to the Public Health Laboratory, was established by the Kimble Glass Company of Toledo, Ohio (subsidiary of the Owens-Illinois Glass Company) and is sponsored by the Conference of State and Provincial Public Health Laboratory Directors.

The cash award of $1000.00 and silver plaque will be presented at the annual meeting of the Conference to be held in Atlantic City, New Jersey, in November, 1956.

Rules Governing Nominations

1. The candidate's work to be considered for nomination should be either:
   a. A fundamental contribution which serves as a baseline for development of diagnostic methods which fall within the province of the public health laboratory.
   b. The adaptation of a fundamental contribution to make it of use in a diagnostic laboratory.
2. The geographical area from which candidates for nomination are to be drawn should be the United States, its territories, and Canada.
3. To be eligible for consideration for nomination in any year, the work should have been completed within the preceding five years; that is work completed since 1 January 1951. A series of investigations on a given subject which extends into the 5-year period will be eligible even though the first study in the series may have been completed earlier.
4. Consideration will be given to nominations *only* if they are covered by a reprint or a summary with bibliography, and a statement of the considerations which justified the recommendations of the study.
5. Nominations may be made by the authors, their associates, or by others. Documentary evidence, etc., should not be signed by the nominator. The nomination, however, should be accompanied by a letter of transmittal.
6. Nominations received after 1 June, 1956 will not be considered for The Kimble Methodology Research Award for the year of 1956, but will be considered for nomination in 1957, providing the work is within the limits of the above Rule 3 during 1957.
7. Nominations of a piece of work where there is more than one author is permissible. (Note: If such work is selected by the Awards Committee, division of the cash award shall be arranged between the workers themselves, but the plaque accompanying the cash award shall be suitably inscribed and become the property of the laboratory where the work is done.)
8. The publications, summaries, materials, etc., submitted to the Nominating Committee will not be returned to the sender.
9. Send all nominations to THOMAS S. HOSTY, Ph.D., Chairman, Nominating Committee, Kimble Award, Bureau of Laboratories, Alabama State Department of Health, Montgomery 4, Alabama.

WANTED, JOURNALS FOR SALE OR EXCHANGE

Journal of Bacteriology, Vol. 61 and 62, unbound; Bacteriological Reviews, Vol. 14, No. 1, 2 and 4 and Vol. 15, No. 1, 2 and 3, unbound; Biological Abstracts, Vol. 10, plus Index, unbound. We would like (1) to exchange for Bacteriological Reviews or Journal of Bacteriology prior to 1948, preferably beginning with 1947 and going backwards, or (2) to sell the above. If interested, contact Buckman Laboratories, Inc., 1256 N. McLean Blvd., Memphis 8, Tenn.

Wanted: A copy of Journal of Immunology Vol. 54, No. 2 (October) 1946. Please contact S. Tenenbaum, Premo Pharmaceutical Laboratories, South Hackensack, New Jersey.

Virology, Volume 1 1955 is offered for sale by Dr. Maurice E. Beeker, Maryland State Department of Health, 2411 N. Charles St., Baltimore 18, Md.

BOOKS RECEIVED AND REVIEWS

Quantitative Bacterial Physiology. Laboratory Experiments, Michale J. Pelczar, Jr., P. Arne Hansen, and Walter A. Konetzka. Minneapolis, Minnesota: Burgess Publishing Co. 1955. v+ 150 pp. $2.75.

In the preface to the first edition of "Experiments in Organic Chemistry" Louis Fieser wrote: "In the belief that a truly helpful manual should attempt to answer rather than to ask, some of the many questions which arise in connection with the experiments . . . an effort has been made to provide the student with useful reading matter. To this end prefaces introducing and explaining the

experimental procedures have been included, and it is hoped that this may be of assistance in encouraging intelligent preparation in advance of the laboratory period".

The authors of Quantitative Bacterial Physiology Laboratory Experiments apparently subscribe to this view inasmuch as the manual contains concise introductions to the subject matter of the experiments. The manual is divided into six sections: Colorimetry and Nephelometry, Bacterial Growth, Cellular Preparations and Extracts, Enzyme Activity, Mutation of Bacteria, and Fermentations. Each section has a number of experiments—the number varying from one in Mutation of Bacteria to eight in Fermentations. Some of the experiments are good basic exercises in bacterial physiology.

Despite its good points this laboratory manual is not without fault. Chief among these is an air of complete "cook-bookery" around a number of experiments. For example, in the preparation of buffers rather than discuss the Henderson-Hasselbalch equation and its applications to buffer preparation a series of weighings and volumetric dilutions are detailed (with no reason given for any of the values involved) which eventuates in "the pH of this buffer should be 7.0." The student can only wonder why it should turn out to be 7.0 instead of some other arbitrary value.

In this scientific day and age mere preparation of an extract of bacterial cells should scarcely be dignified by being an experiment, especially since the authors have directed the material toward "advanced undergraduate and beginning graduate students".

Despite such faults, the actual procedures and the references given at end of each section should be of considerable value to students. How wide an acceptance a work of this kind will have is problematical since many workers prefer to design their own experiments in bacterial physiology to dovetail into the physical limits, departmental enthusiams and time structures of a particular curriculum. Even in these situations Quantitative Bacterial Physiology Laboratory Experiments could well serve in various capacities—as an adoption, as a point of departure for modification, or at least as a stimulus for the preparation of a manual with more congruity for specific locale.

R. E. KALLIO

The Cytology and Life-History of Bacteria. K. A. Bisset, Baltimore: The Williams and Wilkins Company, 2d edition, 1955. XII + 164 pp. $6.00.

This is essentially an exposé of Bisset's views on the cytology, cytogenetics, life cycles, and evolution of bacteria. Here and there a compliment is paid to someone whose methods he used or reference is made to another with whose views he agrees, but the opposition is practically absent from the text. Each chapter is followed by a summary and a limited list of references.

We are told in the preface that this edition "includes a considerable amount of new information which serves, for the most part, to confirm and expand the general theories of cytological structure and behaviour in bacteria" advanced in the first edition. Accordingly, one still finds in this edition the distinction Bisset makes in cell division between rough and smooth bacteria, and the thoroughly discredited scheme of endospore formation imagined, after Badian, by Klieneberger-Nobel, etc. In addition, the most controversial processes, such as cellular fusion, formation of gonidia and of symplasm, etc., are presented as well established, easily demonstrable phenomena. Indeed, one cannot help but wonder, as one reads Bisset's book whether it is not Enderlein's Cyclogeny redivivus.

The book is provocative and somewhat readable, but it is more suited to the research worker than to the student or the casual reader. It is generously illustrated mostly with photomicrographs and often needed diagrams. Unfortunately, among the poorest illustrations are some of those which represent results obtained by the HCl-Giemsa stain and on which Bisset has placed much reliance. This we consider to reflect on the method itself rather than on Bisset's technical ability.

GEORGES KNAYSI

Listeriose. By Dr. Heinz Seeliger. Leipzig: Johann Ambrosius Barth, Verlag; 1955. 152 pp. (Beiträge zur Hygiene und Epidemiologie, No. 8).

This is one of those rare monographs in which the world literature on its subject is thoroughly and skillfully reviewed and critically analyzed. The author has read almost all of the 351 papers referred to, and he has taken great pains to check the interpretations and conclusions set forth in them. An up-to-date review, it is an excellent introduction to many problems yet unsolved or poorly understood.

The reader is rapidly oriented concerning the morphology, biochemical activity, antigen analysis and identification of *Listeria* by a unique summary and conclusions on page 36. A similar condensation of the essential facts about the nature of this anthropozoonosis is presented on page 63. Most useful in this section are the tables summarizing the known geographic distribution of the listeroses in the animal kingdom. The human infections up to 1954, tabulated on 4½ pages, are of interest; in Germany between 1951 and 1954 *Listeria* was isolated by culture from 50 human infections. Identification, pathogenesis, morbid anatomy, chemotherapy, epidemiology and preventive measures are well covered. A clinical diagnosis cannot be made with tools now available. Consequently

Section D, which treats the bacteriologic and serologic diagnosis, should have great appeal to the microbiologist. This subject is treated by an experienced worker thoroughly familiar with all the procedures and with the interpretation of the results. Listerosis can be recognized only through the aid of bacteriologic methods and merely to a limited degree by serologic tests, in particular the demonstration of complement-fixing antibodies in convalescent serum.

One cannot escape the impression that this treatise was written in response to an inner, deeply rooted mature calling, not as the result of a request by an editor or publisher of reviews.

K. F. MEYER

Methods in Enzymology. Volume II. S. P. Colowick and N. O. Kaplan, Editors. New York: Academic Press, Inc. 1955. XX + 987 pp. $23.80.

Topley and Wilson's Principles of Bacteriology and Immunology. G. S. Wilson and A. A. Miles. Fourth Edition. Two Volumes. Baltimore: The Williams and Wilkins Co. 1955. 2331 pp. $24.50.

NEWS OF OUR MEMBERS

Dr. D. D. Woods has been appointed Iveagh Professor of Chemical Microbiology in Oxford. The new professorship is the result of a generous endowment from Arthur Guinness, Son and Co., Ltd. and is named in honor of the head of the house of Guinness, Lord Iveagh. Dr. Woods' early work was done under the late Marjorie Stephenson at Cambridge. He joined the Medical Research Council Unit for Bacterial Chemistry under Dr. Paul Fildes in 1939. During World War II Dr. Woods was engaged in research on defense against biological warfare with a Ministry of Supply research team. He went to Oxford in 1945 and was appointed a reader in microbiology in that institution the next year.

Dr. Hutton D. Slade has been awarded an Established Investigatorship by the American Heart Association. The award is for a 5 year period. Dr. Slade, who is a Member and Chief of Microbiology of The Rheumatic Fever Research Institute, Chicago, will continue his investigations on the biology and metabolism of the group A streptococci.

Drs. Alto E. Feller, University of Virginia, A. F. Rasmussen, University of California at Los Angeles and Robert W. Stone, Pennsylvania State University have recently been appointed by the Chief of Naval Research as members of the Office of Naval Research Advisory Panel for Microbiology.

Drs. John R. Overman, Duke University, and Kenneth F. Girard, McGill University have each been awarded three year Lederle Medical Faculty Awards. These awards are intended to contribute to the support of the teaching and research activities of medical school faculty members who have not yet attained senior faculty rating.

Dr. Sidney R. Elsden will be Visiting Professor of Bacteriology from February 15 through August 15 in the Department of Bacteriology of the University of Illinois, Urbana, Illinois. Dr. Elsden is Senior Lecturer in charge of the Department of Microbiology, Sheffield University, England, and Honorary Director of the Agricultural Research Council Unit of Microbiology. During his stay at Illinois, Dr. Elsden will give a course of lectures in the area of microbial metabolism.

NEWS AND MEETINGS OF LOCAL BRANCHES

Northern California Branch (H. J. Phaff, Secretary-Treasurer)

November 17, 1955. The meeting of the Branch was held in the Auditorium of the Veterinary Science Building, University of California at Davis. The following papers were presented:

1. Control of Pyrimidine Biosynthesis by a Feed-Back Mechanism in *Escherichia coli*. R. A. Yates and A. B. Pardee, University of California, Berkeley.

2. Studies on *Methanomonas methanica*. Martin Dworkin and J. W. Foster, University of California, Berkeley.

3. Galactose Oxidation by *Pseudomonas saccharophila*, J. De Ley, University of California, Berkeley.

4. An Enzyme Involved in the Action of Bacteriophage. D. J. Ralston, University of California, Berkeley.

5. Metal Ion Binding by the New Antibiotic Cycloserine. J. B. Neilands, University of California, Berkeley.

6. Blood Media for Cultivation of *M. tuberculosis*. M. Tarshes, University of California, Berkeley.

7. Pasteurization of Dairy Products Containing the Organism of Q Fever. John B. Enright and Walter W. Sadler, University of California, Davis.

8. Detection and Evaluation of Sub-Micro Quantities of Precipitin. Robert C. Backus, University of California, Berkeley.

Southern California Branch (H. E. Weimer, Secretary-Treasurer)

December 6, 1955. The following officers have been elected for 1956: President, H. M. Kurtz, University of Southern California, Los Angeles; Vice-President, M. D. Appleman, University of Southern California; Secretary-Treasurer, H. E. Weimer, University of California Medical Center, Los Angeles; Councilor, M. J. Pickett, University of California, Los Angeles. The scientific session of the meeting, held in the Brown Bottle, Jos. Schlitz Brewing Company, Van Nuys, Cal. consisted of the following papers:

1. The Metabolism of Glucosamine by *Escherichia coli*. Jach B. Wolfe, Richard Y. Morita and Henry I. Nakada, The Scripps Metabolic Clinic, La Jolla.

2. Growth of a Strain of *Escherichia coli* with Hyponitrite, Nitrous Oxide or Hydroxylamine as a Sole Nitrogen Source. Earl G. McNall and Daniel Atkinson, University of California, Los Angeles.

3. The Microcolonial Test as Applied to Atypical *Mycobacteria*. Lawrence G. Wayne and Irving Krasnow, Veterans Administration Hospital, San Fernando.

4. Differentiation between *Nocardia* and Atypical *Mycobacteria*. Milton Huppert and Lawrence G. Wayne, Veterans Hospital, San Fernando.

5. Canine Rabies in Los Angeles. Charles F. Pait and John E. Forney, City of Los Angeles Department of Public Health Laboratories.

6. Food Technology and Educational Systems in Great Britain. Milo D. Appleman, University of Southern California.

Colorado-New Mexico-Wyoming Branch
(Elizabeth O'Toole, Secretary)

November 12, 1955. The meeting of the Branch was held in the Green Room, Students' Union Building, Colorado A-M College, Fort Collins, Colo. The morning session consisted of a business meeting and luncheon in the South Dining Room. The following officers have been elected for 1956; President, Charles R. Bitter, University of Colorado, Boulder; Vice-President, Darwin Alonzo, University of Colorado Medical School, Denver; Secretary, Margaret P. Stimmel, Colorado A-M College, Fort Collins, Colo.; Treasurer, L. R. Maski, University of Wyoming, Laramie, Wyo.; Councilor, S. G. Dunlop, University of Colorado Medical School, Denver. The afternoon scientific session consisted of the following papers:

Microbiological Research in Various Fields at Colorado A and M.

1. An Epizootiological Study of Infectious Rhinotracheitis in Feedlot Cattle. T. L. Chow.

2. Microbiological Processes in Soil as Related to Crop Production. D. D. Johnson.

3. A Short Journey in the Algal World. L. W. Durrell.

4. Some Microbiological Diseases of Plants. N. R. Gerhold.

5. Effects of Ultraviolet Radiation on Microorganisms. J. J. Lehman.

Kentucky-Tennessee Branch (Ilda McVeigh, Secretary-Treasurer)

November 11 and 12, 1955. At the annual meetings of the Branch held at Vanderbilt University the following officers were elected: President, Dr. Daniel Billen, Oak Ridge National Laboratories, Oak Ridge, Tennessee; Vice President, Dr. O. F. Edwards, University of Kentucky, Lexington, Kentucky; Secretary-Treasurer, Dr. Ilda McVeigh, Vanderbilt University, Nashville, Tennessee; Director (2 yr. term), Mr. J. A. Cameron, University of Tennessee, Knoxville, Tennessee. Dr. D. F. Holtman, University of Tennessee, Knoxville, Councillor, and Miss Mary Ann Aiken, University of Kentucky, Lexington, Kentucky, Director, were elected last year to serve for terms of two years. Two scientific sessions were held, one Friday evening and the other Saturday morning The following papers were presented:

1. The use of paper electrophoresis in the study of the metabolism of *Pseudomonas* species. William F. Daniels and R. H. Weaver, Department of Bacteriology, University of Kentucky, Lexington, Kentucky.

2. The primary cause of death of bacteria in frozen suspensions. Arthur P. Harrison, Jr., Department of Biology, Vanderbilt University, Nashville, Tennessee.

3. Synthesis of nucleic acids and protein during recovery of *Escherichia coli* B/r from the damaging effects of ionizing radiation. G. E. Stapleton, A. J. Sbarra, and David H. Woodbury, Biology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

4. Some morphological features of bacteriophage lysis in *Escherichia*, *Pseudomonas*, and *Salmonella*, O. F. Edwards, Department of Bacteriology University of Kentucky, Lexington, Kentucky.

5. "Peroxidase" in yeast. J. Orvin Mundt and J. A. Cameron, Department of Bacteriology, University of Tennessee, Knoxville, Tennessee.

6. Serological and electrophoretic studies of the agglutinating ability of anti-horse serum rabbit serum for equine erythrocytes. June D. Iben and M. Scherago, Department of Bacteriology, University of Kentucky, Lexington, Kentucky.

7. A more accurate characterization of the genus *Pediococcus*. Rose E. Cerroni, and Arthur P. Harrison, Jr., Department of Biology, Vanderbilt University, Nashville, Tennessee.

8. Growth response of *Salmonella pullorum in vivo* in the presence of TCA inhibitors. Robert F. Gilfillan, D. Frank Holtman, and Richard T.

Ross, Department of Bacteriology, University of Tennessee, Knoxville, Tennessee.

9. The effect of amino acids on the growth of *Caulobacter vibrioides*. William T. Soper and R. H. Weaver, Department of Bacteriology, University of Kentucky, Lexington, Kentucky.

10. A study of hepatitis in hamsters infected with equine abortion virus. I. Morphological studies of the inclusion. Charles C. Randall and Everett C. Bracken, Department of Microbiology, School of Medicine, Vanderbilt University, Nashville, Tennessee.

11. A study of hepatitis in hamsters infected with equine abortion virus. II. Cytochemical studies. Everett C. Bracken and Charles C. Randall, Department of Microbiology, School of Medicine, Vanderbilt University, Nashville, Tennessee.

12. The pathogenic aerobic Actinomycetes. Some morphological and cultural characteristics. Margaret Hotchkiss, Department of Bacteriology, University of Kentucky, Lexington, Kentucky.

13. A study of the sensitivity of human leukocytes to bacterial filtrates by the Blatt and Nantz method. John Partin and M. Scherago, Department of Bacteriology, University of Kentucky, Lexington, Kentucky.

14. Hydrogen sulfide production by Brucella species. Mary Ann Aiken and R. B. Weaver, Department of Bacteriology, University of Kentucky, Lexington, Kentucky.

15. Effect of the chick embryo upon the 17D strain of yellow fever virus mouse LD50 titer. Ray Dutcher and O. F. Edwards, Department of Bacteriology, University of Kentucky, Lexington, Kentucky.

16. Chemical restoration of an X-ray induced block in desoxynucleic acid synthesis in cysteamine-protected bacteria. Daniel Billen, Biology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

17. Production of indole acetic acid by the rust fungus, *Gymnosporangium juniperi-virginianae* Schw. Frederick T. Wolf, Department of Biology, Vanderbilt University, Nashville, Tennessee.

18. Evidences of activation of the urea cycle in chicks infected with *Salmonella pullorum*. Richard T. Ross, D. Frank Holtman and Robert F. Gilfillan, Department of Bacteriology, University of Tennessee, Knoxville, Tennessee.

Maryland Branch (C. Baxter McLaughlin, Secretary-Treasurer)

December 6, 1955. The Christmas meeting of the Branch was held at The Alameda, Baltimore. At the business meeting Theodore J. Carski, the retiring President of the Branch, was presented with a citation and desk clock as tokens of recognitions of "his unfailing support as well as excellent and faithful service to the Maryland Branch for many years." The officers elected to serve during 1956 are: President, C. Baxter McLaughlin; Vice-President, Robert C. Millonig; Secretary-Treasurer, Edward J. Herbst; Councilor, Donald E. Shay; Alternate Councilor, Theodore J. Carski. A non-scientific session followed the business meeting at which H. Joseph Merrion, Wyeth Laboratories, Inc., talked upon "Orchid Raising as a Hobby" and Arthur Cunliffe, Hi-Fidelity House gave a demonstration and discussion of "Modern Conception of Hi-Fidelity Equipment."

January 30, 1956. The first meeting of 1956 for the Branch was held at the Maryland State Department of Health Auditorium at which the following papers were presented:

1. Some Observations on Sporulation Processes in Clostridium Perfringens. Paul Ellner and Andrew G. Smith, Medical School, University of Maryland.

2. Quantitative Aspects of APC Virus—Hela Cell Interaction. Bernard Roizman, School of Hygiene and Public Health.

Michigan Branch (Elizabeth J. Cope, Secretary-Treasurer)

December 3, 1955. The Christmas meeting of the Branch was held at the Hotel Statler, Detroit. The following officers were elected for 1956: President, Donald Marchant, University of Michigan, Ann Arbor; Vice-President, Fred Rights, Wayne University School of Medicine, Detroit; Secretary-Treasurer, Elizabeth J. Cope, Detroit Health Department Laboratories; Councilor, Raymond Sarber, Detroit. The scientific session consisted of the following papers:

1. The *in vitro* Inactivation of Viruses in Plasma and in Whole Blood. Gerald Lo Grippo, Henry Ford Hospital, Detroit.

2. Two Stages in the Initiation of a Virus Infection. Nakao Ishida and W. Wilbur Ackerman, University of Michigan.

3. Gelatin and Jelfoam Filters as Sampling Devices for Bacterial and Viral Aerosols. Fred Rights, Wayne University Medical School, Detroit.

4. A Comparison of Two Media for Chlamydospore Production by *Candida albicans*. Vivian Larson and Norma H. Broom, Detroit Department of Health.

5. Enhancement of Antibody Response to Protein Antigens by a Polysaccharide (Endotoxin) Derived from *S. typhi*. A. G. Johnson, University of Michigan.

6. Film. Phase Microscopy. Introduction by Carolyn Raut, Detroit Institute of Cancer Research.

Eastern Missouri Branch (Lucille K. Schulze, Secretary-Treasurer)

October 29, 1955. The sixty-first meeting of the Branch was held in the St. Louis Health Division

Board Room in the Municipal Courts Building. The following program was presented:

1. A Tour of the St. Louis Public Health Laboratories. N. D. Duffett, Director.

2. Bacteria in Oil Field Waters. Burton Moore, Tretolite Co.

3. Report of the National Council Meeting. Leonard F. Laskowski, Jr.

4. A systematic Approach to the Isolation and Classification of Spore Forming Anaerobes with Particular Reference to the Gas Gangrene Group. Theodore F. Wetzler, Vestal Inc.

5. Evaluation of Antiseptic Toxicity in Human Skin Tissue Cultures. F. B. Engley, Tom Wynn, C. M. Pomeret, University of Missouri School of Medicine.

The following paper was omitted in the report of the April 23 meeting:

Experimental Evaluation of Criteria for Assessing the Effect of X-Radiation on the Immune State. L. J. Paulisson and I. L. Schechmeister, Department of Bacteriology, Washington University School of Dentistry.

December 12, 1955. The sixty-second meeting of the Branch was held in the McMillan Hospital Auditorium. The following papers were presented:

1. Morphology and Bacteriology of "Open-Healing" of Tuberculous Cavities as Seen in Surgically Resected Lung Specimens. Capt. Robert Thompson, Fifth Army Area Medical Laboratories.

2. Studies on Biological Synthesis of Cellulose by *Acetobacter xylinum*. J. Skopek, St. Louis Public Health Laboratories.

New Jersey Branch (Theobald Smith Society; Madelon R. Grimm, Secretary)

October 20, 1955. The Branch met at the Institute of Microbiology, Rutgers University. Werner Braun of the Institute of Microbiology spoke on "What Causes Bacterial Populations to Change?"

November 17, 1955. The meeting was held at the Research and Development Division, Merck and Co., Inc., Rahway, N. J. The scientific session consisted of a panel discussion by nine New Jersey bacteriologists from various industries discussing the applications of bacteriology to their particular work.

1. Use of Plastic Containers in Foods. Watson A. Ackart, Bakelite Corporation.

2. Chlorination, Fungicides. Paul M. Borick, Wallace and Tiernan.

3. Steroids, Antibiotics, Fermentation. Fernando Carvajal, Schering Corporation.

4. Fermentation, Antibiotics in Foods. Marjorie Darken, American Cyanamid Company.

5. Chemotherapeutic Agents. Philip C. Eisman, CIBA.

6. Fermentation, Steroids, Antibiotics, Vitamins. David Hendlin, Merck and Co., Inc.

7. Fungicides, Antifouling Agents for Paint and Oils. Paul Klens, Nuodex Company.

8. Chemotherapeutic Agents. Alfred Kupferberg, Johnson and Johnson.

9. Chemotherapeutic Agents. Benjamin Schwartz, Warner-Chilcott.

December 15, 1955. The Branch met at Johnson and Johnson Research Center, New Brunswick. The scientific program, devoted to "papers by interested young bacteriologists", consisted of talks by Charles Matthijssen, Jr., Rutgers University; Micheline Mathews, College of St. Elizabeth; James G. Cappuccino, Rutgers University; Arthur C. Ford, Rutgers University; Rollin E. Pepper, Ethicon Sutures Laboratories. Following the formal meeting, the Branch was the guest of Johnson and Johnson, Research Center, Ethicon Suture Laboratories, Inc., and Ortho Research Foundation at a Christmas party.

February 2, 1956. The Branch met in the Music Building of Douglass College, New Brunswick, N. J. The scientific meeting was devoted to a symposium "Recent Developments in Clinical and Public Health Bacteriology" consisting of the following papers:

1. New Developments and Shifting Trends in the Public Health Laboratory Field. E. L. Shaffer, State of New Jersey Department of Health, Trenton.

2. Treponemal Antigen Tests for Syphilis. E. E. Thomas, State of New Jersey Department of Health, Trenton.

3. Serological Types of *Escherichia coli*. R. Stein, State of New Jersey Department of Health, Trenton.

4. The Millipore Filter. J. H. Spooner, State of New Jersey Department of Health, Trenton.

5. Penicillin-Blood Agar Media for Mycobacterium tuberculosis Growth. C. Jedynak, State of New Jersey Department of Health, Trenton.

6. Antibiotic Susceptibility Tests and Laboratory Diagnosis of Leptospirosis. T. G. Anderson, Temple University School of Medicine, Philadelphia, Pa.

7. Viruses and the Public Health Laboratory. D. Widelock, New York City Department of Health, New York.

February 23, 1956. The 81st meeting of the Branch was held at Hoffmann-LaRoche, Inc., Nutley, N. J. This meeting was the second of a series devoted to symposia voted by members "as the dullest subject." *Bacterial Cytology* was presented by the following speakers: Dr. George B. Chapman, RCA Laboratories Division, Princeton. Dr. Norman C. Dondero, Institute of Microbiology, Rutgers University. Dr. Evelyn Oginsky, Merck Institute for Therapeutic Research.

March 22, 1956. The fifth Annual Banquet Meeting was held at the Raritan Valley Inn, Somerville, New Jersey under the chairmanship of Dr.

Waclaw Szybalski, Institute of Microbiology, Rutgers University. The third Selman A. Waksman Honorary Lectureship Award was presented to Dr. John T. Bonner, Associate Professor of Biology, Princeton University in recognition of his work on the development of lower organisms. The award takes the form of a suitably engraved medal and a check for $100.00. Dr. Bonner's speech, entitled "Differentiation in Cellular Slime Molds," followed the presentation of the award.

Eastern New York Branch (Sally M. Kelly, Secretary-Treasurer)

January 17, 1956. The Winter meeting of the Branch was held at the Division of Laboratories and Research, New York State Department of Health, Albany. Rene J. Dubos, Rockefeller Institute for Medical Research, spoke on "Reversible Changes in Susceptibility to Infection".

New York City Branch (J. S. Kiser, Secretary)

January 5, 1956. The seventy-second meeting of the Branch was held at the Hotal Statler. Dr. Dorothy M. Horstmann, Yale University School of Medicine, was the luncheon speaker. Dr. Horstmann spoke on "Poliomyelitis, 1956". The scientific session was divided into two sections. Section A papers were:

A1. The Bacteriophage of Beta Hemolytic Streptococci. Richard M. Krause, The Rockefeller Institute for Medical Research.

A2. Sulfonamides and Experimental Histoplasmosis. S. Geftic, J. Tanzola and R. L. Mayer, Ciba Pharmaceutical Products, Inc.

A3. Mechanistic Hypothesis for Non-Specific Hypersensitivity. J. A. Parfentjev and E. E. Manuelidis, Yale University School of Medicine.

A4. Immunoelectrophoresis: A Survey of Applications. Curtis A. Williams, Jr., The Rockefeller Institute for Medical Research.

A5. Immunological Studies with Human Tissue and Tumor Antigens. Leonard Korngold, Sloan-Kettering Institute for Cancer Research.

A6. The Characterization of Antigen and Antibody by Complement-Fixation Methods. Maurice M. Rapport and Lise Lotte Graf. Sloan-Kettering Institute for Cancer Research.

A7. Reversible Changes in Susceptibility to Infection with Friedlander Bacilli. Russell W. Schaedler and Rene J. Dubos, The Rockefeller Institute for Medical Research.

A8. (Joint Meeting with Section B). Kodachromes of May Meeting. Merrill W. Chase, The Rockefeller Institute for Medical Research.

Section B

B1. The Purification and Properties of *Saccharomyces fragilis* ONPGase. W. M. Connors, National Dairy Laboratories, Oakdale.

B2. The Estimation of Lactase Activity by Horizontal Agar Diffusion in the Presence of Glucose Oxidase. L. A. Nutting, W. M. Cort and L. R. Davis, National Dairy Laboratories, Oakdale.

B3. New Assay Organisms for Vitamin B_{12}. Seymour H. Hutner, The Haskins Laboratories.

B4. Infrared Absorption Spectra of *Bacillus megaterium* Phages and Host Cells. M. Grimm and F. C. Kull, Ciba Pharmaceutical Products, Inc.

B5. Mutational Acquisition of Two Enzymes Concerned with Rhamnose Utilization in *Pasteurella pestis*. Ellis Englesberg, Biological Laboratory, Cold Spring Harbor.

B6. Observations on the Mode of Action of Amicetin on *Lactobacillus arabinosus*. Dorris J. Hutchison and Suzanne H. Conrad, Sloan-Kettering Institute for Cancer Research.

North Carolina Branch (Mary A. Poston, Secretary-Treasurer)

December 10, 1955. The Fall Meeting of the Branch was held at Bowman Gray School of Medicine, Winston-Salem, N. C. The following officers were elected to take office January 1, 1956: President, John Etchells, N. C. State College, Raleigh, N. C.; Vice-President, Eva Campbell, Guilford College, Guilford, N. C.; Secretary-Treasurer, Mary A. Poston, Duke University School of Medicine, Durham; Councillor, William J. Cromartie, University of North Carolina School of Medicine, Chapel Hill, N. C.; Alternate Councillor, Alfred Borg, North Carolina State College, Raleigh, N. C.

The Scientific program consisted of the following papers:

1. Purine Metabolism in Bacteria. Samuel H. Love, Bowman-Gray School of Medicine.

2. Ascocarpic Stage of *Hormodendrum pedrosoi*. Frederick A. Wolf, Duke University.

3. Pleuropneumonia-like Organisms Isolated from Goats. James G. Lecce, North Carolina State College.

4. Further Studies on Bacterial Growth Stimulants in Pancreas Tissue. J. K. McAnelly and M. L. Speck, North Carolina State College.

5. Evaluation of Seabra Serum Lipase Test for Tuberculosis. J. D. Thayer and H. Tauber, Venereal Disease Experimental Laboratory, U.S.P.H.S., Chapel Hill.

6. The TPCF—A New Test for Syphilis. Joseph Portnoy, Venereal Disease Experimental Laboratory, U.S.P.H.S., Chapel Hill.

7. Cytology of *Escherichia coli* and *Bacillus megetherium*. Abraham Widra, University of North Carolina.

The evening session of the meeting consisted of an address by D. Gordon Sharp, Associate Professor of Biophysics in Experimental Surgery, School of Medicine, Duke University on "Virus

Particle Counts by Means of the Electron Microscope".

Eastern Pennsylvania Branch (Theodore G. Anderson, Secretary-Treasurer)

November 22, 1955. The 252nd meeting of the Branch was held in Medical Alumni Hall, School of Medicine, University of Pennsylvania. The scientific program consisted of an address by Dr. Merrill W. Chase, Rockefeller Institute for Medical Research, New York, on "Some Studies on Drug Allergy".

January 24, 1956. The 253rd meeting of the Branch was held in Medical Alumni Hall, School of Medicine, University of Pennsylvania. The following papers were presented at the scientific program:

1. Occurrence of Blood Group Active Substances in Higher Plants and Bacilli. George F. Springer.
2. Panel Discussion "Sensitivity Testing to Antibiotics by the Disk Method". E. H. Spaulding, Temple University, Moderator; T. G. Anderson, Temple University; George Eisenberg, Philadelphia General Hospital; E. G. Scott, Delaware Hospital, Wilmington; Robert I. Wise, Jefferson Medical College.

February 28, 1956. The 254th meeting of the Branch was held in Medical Alumni Hall, School of Medicine, University of Pennsylvania. The scientific session was devoted to papers on *Antibody Formation*.

1. Hepatic Injury and the Production of Antibody. W. P. Havens, Jr., Jefferson Medical College.
2. *In Vivo* Studies on Precipitin Production by the Rabbit Spleen. Kingsley M. Stevens, Sharpe and Dohme Research Laboratories.
3. Transfer of Lymph Node Cells after in vitro Incubation with Dysentery Antigens. T. N. Harris and Susanna Harris, Children's Hospital.
4. Genetic Theory of Antibody Formation. William E. Ehrich, University of Pennsylvania and Philadelphia General Hospital.

South Central Branch (E. J. Johnson, Secretary-Treasurer)

December 3, 1955. The Fall Meeting of the Branch was held in the Hutchinson Memorial Building, Tulane University Medical School. Following the scientific session, the business meeting was held at which the following officers were elected for 1956: President, William A. Pierce, Tulane Medical School; Vice-President, John A. Alford, Mississippi State College; Secretary-Treasurer, Emmett J. Johnson, Louisiana State University. The following papers made up the scientific session:

1. The Immunization of Mice Against *Coccidioides immitis*. Lorraine Friedman, Tulane University School of Medicine and C. E. Smith, University of California.
2. A Continuing Study of the Acquisition of Natural Immunity to Poliomyelitis in Representative Louisiana Households. John P. Fox, Henry M. Gelfand, Dorothy R. LeBlanc and Donald P. Conwell, Tulane University School of Medicine.
3. The Current Status of Vaccination with Living Poliomyelitis Viruses. Morris Schaeffer, Montgomery, Ala.

Virginia Branch (Barbara H. Caminita, Secretary-Treasurer)

December 10, 1955. The Fall Meeting of the Branch was held at the Medical College of Virginia, Richmond, at which the following papers were presented:

1. The Phosphorylation of l-Arabinose by *Propionibacterium pentosaceum*. Wesley Volk, University of Virginia Medical School, Richmond, Va.
2. Aspects in the Isolation and Identification of *Salmonella*. Lillian Rucker, State Department of Health Laboratory, Richmond, Va.
3. Preliminary *in vitro* Studies on the Dissimilation of Purines and Pyrimidines by Bovine Rumen Bacteria. P. Jurtshuk and R. N. Doetsch, University of Maryland, College Park, Maryland.
4. Hemolytic Activity Associated with *Leptospirae*. Catherine Russell, University of Virginia Medical School, Richmond, Va.
5. Studies on Placental Passage of Toxins. H. T. Knighton, S. J. Kreshover and J. A. Hancock, Medical College of Virginia.
6. Methods of Biological Warfare as Pertains to Bacteriology. French Skinner, State Department of Health Laboratory, Richmond, Va.
7. Medical Problems in Costa Rica. E. C. Nelson, Medical College of Virginia.

Washington Branch (Howard Reynolds, Secretary-Treasurer)

November 22, 1955. The 206 meeting of the Branch was held at the Army Medical Service Graduate Center. The following officers were elected to serve in 1956: President, M. J. Pelczar, Jr.; Vice-President, Hugh R. Gilmore, Jr.; Secretary-Treasurer, Howard Reynolds.

Dr. Roger D. Reid, Head, Microbiology Branch, Office of Naval Research, spoke on "Trends in Microbiology".

January 24, 1956. The 207th meeting of the Branch was held at the Walter Reed Army Institute of Research, Washington. The scientific session consisted of the following papers:

1. Bacteriological Studies of Non-Gonococcic Urethritis in Males. John D. White, Armed Forces Institute of Pathology.
2. A Selective Medium for the Isolation of *Veillonella*. Morrison Rogosa, National Institute of Dental Research, National Institutes of Health.
3. Growth Characteristics of Rickettsiae in

Tissue Cultures. M. Bozeman, H. Hopps, J. Danauskas, E. Jackson, J. E. Smadel, Walter Reed Army Institute of Research.

February 28, 1956. The 208th meeting of the Branch was held in the Sternberg Auditorium of the Walter Reed Army Institute of Research. The following papers were presented:

1. Factors in Localization of Infections. D. Murray Angevine, University of Wisconsin.

2. Some Effects of Animal Viruses on Tissue Culture Metabolism. Hilton Levy and Sam Baron, National Institutes of Health.

3. *In vitro* and *In vivo* Studies with Cathomycin and PA105 Against *Micrococcus pyogenes*. Stanley C. Nagle, Jr. and Mary Louise Robbins, George Washington University Medical School and Howard E. Noyes and J. P. Sanford, Walter Reed Army Institute of Research.

NEW MEMBERS

New Active Members

November 1, 1955 through March 2, 1956

Ackermann, W. Wilbur, 818 Newport Rd., Ann Arbor, Michigan

Adams, Robert A., Miles-Ames Res. Lab., Elkhart, Indiana

Aladjem, Frederick, California Inst. of Technology, Pasadena, California

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Backus, Edward J., Lederle Labs., Pearl River, N. Y.

Bacon, Marion, Box 447, Pullman, Washington

Barnekow, Russell G., Jr., Bacteriology Dept., Kansas State College, Manhattan, Kansas

Baughn, Charles O., Research Division, American Cyanamid Co., Pearl River, New York

Beasley, Annie R., Bacteriology Dept., School of Medicine, Univ. of Miami, Coral Gables, Fla.

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